SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

THE SCOTCH IRON TRADE—No. XVII.

THE WISHAW IRONWORKS.

The Wishaw Ironworks are situated near the rising and populous town of that name, on the main line of the Caledonian Railway Company, near to and communicating with which pits are also worked for the supply of both coal and ironstone. The works belong to the Glasgow Iron Company, of which the managing partner is Mr. Robert Cassels, the gentleman who acted as Chairman of the local committee in charge of the arrangements connected with the late visit of the Iron and Steel Institute to Glasgow. The Wishaw Ironworks were not included among the establishments visited by the Institute on the occasion of its recent meeting, but they are in some respects well worthy the attention of scientific and mechanical minds. It may be interesting to state, at the outset, that the Glasgow Iron Company carry on the manufacture of both pig and malleable iron, being in this respect analogous to the Monkland Iron and Steel Company. At a time like the present, when the profits of the malleable iron manufacturers who are compelled to buy their "pig" are so very precarious, the fact of having blast-furnaces in operation is no common advantage. It enables the manufacturer to control both branches, and carry both on at a profit, whereas the maker of finished iron alone is at the mercy of the pig-iron "ring," and is compelled to pay the current figure, whatever that may be. This compulsion and the prevailing high value of pig-iron and coal have operated so injuriously upon the malleable iron maker that in not a few instances contracts have had to be worked off at a loss; and matters are so far from mending that two large firms in the Coatbridge district are refusing to book fresh orders at list rates, choosing rather to suspend operations altogether.

This, however, by the way, with reference to the Wishaw Ironworks, which cover something like ten acres of ground, we may state that they comprise three blast-furnaces, all 50 ft. in height, and measuring 16 ft. diameter at the boshes. Midway along the line in front of the furnaces there is a steam-hoist for elevating the charge to the furnace mouth. All the furnaces are open-topped, and they are connected with each other by means of girder-bridges, placed on a level with the charging ports. The engine used for the hoist is of the horizontal kind, and has a 14-in. cylinder and a 2-ft. stroke. One engine supplies all the three furnaces with blast. The steam-cylinder is 48-in. diameter, the blowing-cylinder has a diameter of 7 ft. 6 in., and the piston has a stroke of 8 ft. Besides supplying blast for the furnaces, this engine actuates a ram and other machinery required for supplying the works with water, of which an adequate supply is obtained close at hand. The engine, we may add, is built on the low-pressure condensing principle by Mr. Gray, of Washington-street, Glasgow, and the steam is generated in six tubular boilers, 26 ft. in length by 6½ ft. diameter. Generally the vacuum-gauge shows a pressure of 16 lbs. to the square inch, the air-gauge registering about 3 lbs. From the air-cylinder the blast is conveyed into the hot-blast ovens, in which, by means of a recent improvement, the air is heated to the extent of nearly 900°. This improvement is one that is likely to be more generally adopted. On an average the blast-engine pumps about 7000 cubic feet of air per minute. Two small horizontal engines, with 8-in. cylinders, supply the tuyeres with water, and also assist in raising the supply required for the use of the boilers.

The charge used in the Wishaw furnaces differs very little from that of the other works in the district. Although the Wishaw brand does not stand so high as those of Gartsherrie, Coltness, and other older works it is rising in favour, and it is in such demand that for many months past there has been little or no iron stored at the works. The quantity required for the malleable ironworks of the company is, however, so large that there is very little left to throw into the market. The annual production of the Wishaw works is about 24,000 tons per annum, being about 70 tons per 24 hours. The ironstone used at these works is brought from a considerable distance, but coal and limestone are found close at hand in sufficient abundance for all the requirements of the company for many years to come. New pits have recently been opened up in the neighbourhood of the works, and, indeed, there is no district in Scotland where the coal trade is capable of greater development. On this account it is only reasonable to expect that before very long there will be an extension of the Wishaw Ironworks, and this view is strengthened by the fact that in the meantime, and for a long time past, the demand has been beyond all proportion to the supply.

Meanwhile, however, the Glasgow Iron Company are not losing sight of the improvement and adaptation to the latest scientific and mechanical discoveries of their existing appliances. It is not long since they erected in the immediate neighbourhood of the furnaces a refinery, to which the iron is transferred directly after being tapped, and thus converted into refined metal before it becomes cool. The company have also built ten ovens, for the manufacture of coke from the surplus dross of their coal pits. In this way a great waste is prevented. A patent machine has been erected at one of the pits near the furnaces, and it is kept constantly at work washing the dross, which it does at the rate of about 2000 tons per month. After undergoing this process the dross is so far purified that it can be converted into a very fair coke, which is sold to other consumers as well as retained for the company's own use. From pits in the vicinity the company also extract a considerable quantity of fire-clay, and this is found both useful and economical in the structural operations that are always to a greater or less extent going on about very large establishments.

At the present time the Glasgow Iron Company have six collieries in operation within 1½ mile of the Wishaw furnaces. From these six pits a quantity of coal is raised, sufficient not only to serve the furnaces but to supplement largely the supplies required for the other works carried on by the company at Glasgow and Motherwell. About these latter works we may have more to say in a future article. The company now experience, in common with all other colliery owners, the vexation and loss of a restricted output, but when in full working order the pits at Wishaw should turn out on an average 1000 tons each per week. They vary in depth from 60 to 100 fathoms, and all the structural arrangements about the shafts and the pit-head are carried out on the most approved principles, and with a special eye to the primary element of ventilation. The miners employed here are now earning on an average about 9s. per day of eight hours. The whole number of workmen employed at Wishaw by the Glasgow Iron Company is about 900. The rolling stock owned by the company is large, and is used to bring from their pits at Kelvinside, near Glasgow, at Campsie, and at Gilmerton, near Edinburgh, the supplies of ironstone required for the use of the furnaces. Two friendly societies are carried on in connection with the works, one being for the miners and the other for the workmen employed at the furnaces. The company have provided schools for the education of both Protestant and Roman Catholic children.

NEW SCHEME FOR DRAINING THE SOUTH STAFFORDSHIRE COAL FIELD.

Now that fuel is so scarce and expensive all are alive to any new project or enterprise which has for its aim the augmentation of the supply of this precious mineral, Coal. In South Staffordshire it has become a question of vital importance as to where the quantities of fuel necessary for iron and other manufactures are to come from in the future; and, even now, the demand exceeds the supply, so that large quantities are imported from other districts; but it would not do to be too much dependent on these. We have, therefore, explorations which are likely to lead to a vast extension of the coal field, of which we have given full particulars; and now we have to speak of a project for draining the whole of the water-logged portions of the district. Few would imagine the vast quantities of valuable minerals that are now entirely immersed in the Black Country which are completely lost to the owners, and will be so until increased facilities are provided for draining them; it, perhaps, not being within the power of those concerned to furnish capital enough for the purpose, or even if in this position they may not be able to rid themselves of the water with commercial success. The sub-districts of Tipton, Old Hill, Great Bridge, Bilston, Kingswinford, Bromley, Brades, and other minor ones, are sufferers, more or less, from that great enemy to mining enterprise—Water. There is much maiden mine, and thousands of tons of ribs and pillars, that could be worked to considerable profit were there an efficient system in vogue for clearing them of the water. These portions of the great mineral district are chiefly basins, in which the water lays in the deep, or is retained by some ridge or fault. The proprietors whose mine is situated in the centre of these basins are burdened with the water from those working upon the "crop," or rising banks surrounding them; and it is hard that they should, if wishing to win their coal and ironstone, be put to the expense of raising the water, which is not the produce of their own mines, but often purposely thrown upon them by their neighbours; and they have no means of redress, as the action is considered legal, and to some minds evidences good mining. From this it is evident that, for the sake of justice, and in many cases as a matter of policy, the persons owning minerals in these pounds and their vicinity should co-operate to pump out the water—but, as is often the case, these basins or pounds may drain others in a higher level, or considerable areas sloping towards them.

Under these circumstances none but a general scheme will thoroughly answer the purpose, which will fairly distribute the burden; and it must be furnished with compulsory powers to be successful, as there are many who are now getting their mines drained for nothing who will object to join or subscribe to any project. Another great advantage gained by a general scheme will be the holding of its management and direction by one set of engineers, thus guaranteeing the whole thing being carried out to a regular system, and the working of one sub-district in unison with the others, curtailing expenses, and thereby reducing the outlay to a minimum. Of the schemes already put in operation the Tipton drainage compact is, perhaps, the oldest, and it has had, in some degree, a good effect. Yet there never has been a perfect unanimity of feeling between those concerned, and many, we believe, have used auxiliary power, while others have considered their portion of the expenses not equitably adjusted, and it is only intended to run another twelve months in order to get a compulsory Act. The Old Hill compact, originated by Mr. Henry Johnson, of Dudley, constituted itself into a limited liability company, with 12 members; but they, we understand, are necessarily draining the mines of other proprietors, as is also the case at Tipton, situated in the "crop," and it would be, therefore, manifestly to the advantage of both were they to merge into the general scheme which is proposed to apply to the whole district. The promoters contemplate that there will be no opposition from the members of either of these compacts. It is certainly owing to the workings of the "crop" mine owners that a considerable portion of the water gets into the deep, for the shallowness of the workings, the cracking of the beds of the brook courses and canal beds all tend to these inundations; and it is only fair that those who admit the water, although they do not suffer by it, should assist in raising it again to the surface.

It has been suggested that a large pumping engine should be placed in the centre of each of these pounds, all the surface water should be prevented from running down the numerous shafts, and the brook courses, canals, and "swags" carefully watched and kept, as far as possible, water-tight, and then it is said that there would soon be an end to the difficulty. The general scheme which is projected is now in the hands of Messrs. H. J. and G. Underhill, and Messrs. Corser and Fowler, both eminent firms of solicitors in Wolverhampton; and we understand the engineers are to be Messrs. David Peacock and Henry Johnson, and no gentlemen have a better knowledge, both practical and theoretical, of the South Staffordshire coal field; both have been for their whole lives acquainted with it, and are the authorities consulted on all matters of importance pertaining to it. Mr. Henry Smith, of Walsall, who is mentioned as secretary, has also given the subject much consideration. A general scheme like that proposed would enable faults to be cut through, ribs and barriers taken down, and the water, instead of being locked up in small pounds, could be passed on to general pumping stations, there to be raised to the surface at a minimum cost, and what now burdens the coal, in some instances, to the extent of 6d. per ton would probably not cost 1d. There are many large collieries pumping over 30 times as much weight in water as they are drawing in coal, and this is mostly coming from neighbouring pits, and there is no legal remedy under existing mining laws. It is thought that a proper attention to surface water courses and "swags" is of almost as much moment as pumping. Within the last few years the water of brooks, and even small rivers, has been known to flow for days and weeks into mines before it could be effectually stoped, and has ultimately had to be pumped back from a depth of 200 yards. We need scarcely explain, that in extracting water from mines, the whole cost is not limited to the actual pumping; for there is the keeping in repair of the roads and water levels which conduct the water to the engine; this, in fact, is sometimes more costly than the pumping itself, giving a reason in favour of pumping the water, if possible, where it is generated, and not letting it flow so far through the district. We are informed that not one-fourth the quantity of ironstone is being raised in South Staffordshire that was 10 years back, and this is not because it is nearly exhausted, but on account of so much of it being under water, and consequently so difficult and expensive to work.

The new scheme deserves the support of all connected with the district, not only as coal masters, but as consumers of the coal raised, and all their influence should be brought to bear, as it cannot help but be an advantage to all. There is no doubt there will be some opposition, as there is to every new project, but it will be slight.

COAL MINES INSPECTION—THE NEW ACT.

Sir,—I should like to ask the question, through the columns of the *Mining Journal*, what is the meaning, or who is Manager, as referred to by the New Mines Regulation Act? The only definition therein given to the term "manager" is in the explanation of the term "agent" when used in relation to any mine means any person having, on behalf of the owner, *care* or *direction* of any mine, or of any part thereof, and superior to a "manager" appointed in pursuance of this Act.

If the person having the *care* and direction of a mine is not the "manager," what is he, and who is the manager? Is the deputy having charge of a mine, or part of a mine, for the time he is on duty to be "manager" of a mine? Or when two or more parts of a mine are worked separately, and each such part shall be for the purpose of the Act deemed to be a separate number, or in other words a separate mine, been too large to be under the control and daily supervision of one "manager" two or more "managers" or deputies may be appointed. The terms owner, agent, and manager are apparently in the different parts of the Act very closely connected, and each is held guilty to the same extent in most instances, and each held responsible for the wrong of other persons, who are bound to observe the special rules established for any mine, unless *he* (I suppose this to mean "manager") not *they*, although they are all three immediately above included (section 52), and in the "supplemental penalties" the said "manager's" guilt and liability to a penalty are equal to the owner or agent. I will now put the question in a more practical form, as many are at present to my knowledge situated. There are many underground managers, as I should at present term them; some one pit or mine, some two, some three, and so on; perhaps some of those sufficiently extensive to come under section 25, provided for the division of the mine into parts. In each of those pits or mines are a sufficient number of deputies appointed by the present underground manager, and each such deputy having full charge of the work and workmen over that part in which he is so appointed from day to day, and not even seeing the underground manager for days, except some difficulty should occur requiring his attention and advice. This said underground manager has full charge over all such deputies, sets out all new work, or gives instruction for such to the different deputies; gives all instruction as to the system of ventilation to be adopted, and by what means to be carried into effect; surveys or superintends all surveying, measurements, leveling, &c.; keeps up all working plans, sections, &c., advises as to the erection of all engines for underground haulage, and full charge is also given by him to each deputy to carry out the details of daily operations in the part in which each is appointed.

I now ask again, Is the agent who, according to the definition given in the New Act, having the *care* or *direction* of any mine on behalf of the owner or the underground manager as at present, who has charge of all underground operations, and to whom all other officials and workmen apply in case of emergency, or the present class of deputies who have charge of the work and workmen for the time being in that part of the mine in which he is placed, to be the certificated "manager?" The terms of officers I have here given refer to the Yorkshire district.

An Interested One.

COAL-GETTING BY MACHINERY.

Sir,—In the Journal of last week you gave some particulars as to the progress now going on in the working of coal-cutting machinery, and referring in the same article to the forthcoming trial for the 500*l.* prize offered by Mr. W. Firth. Of the machines most likely to take part in the trials, amongst the names mentioned we note that the following are likely to be exhibitors—Messrs. Firth, who have at West Ardsley Colliery seven or eight machines at work, and where, I am informed, the first trial is to take place. The second trial is to take place at Wooley Colliery, near Barnsley; at this colliery also Messrs. Firth's machines are at work. Is it not a remarkable fact that the trials have to take place at the two collieries where Messrs. Firth's machines are at work, and where we must assume that everything is in working order?

Now, I wish to ask the Secretary whether other intending competitors than Messrs. Frith or their men will, before the day of trial, be permitted to inspect the working face of coal on which the machine belonging to a competitor so applying will have to work? If not, will this be deemed by the committee a fair trial—that is, for one operator to be for months practising in a particular coal seam, and another exhibitor or operator to be refused such a great and, to my mind, important privilege? To the writer it would appear that the fairest way would have been for the trials to take place on neutral ground, and not in places where competing machines are now at work.

Another important question that requires some explanation is the fact that the conditions of trial as to pressure have been altered from those first published—that is, the pressure has been increased from 50 to 60 lbs.; and I think this a most important and unnecessary alteration, as some machines require near 60 lbs. pressure to work at all, whilst other forms of machines only require 20 to 30 lbs. Would it not appear that the pressure has been increased to 60 lbs. on the square inch to accommodate some particular machine? As users of compressed air would find a 60-lbs. pressure a most expen-

sive power, it would have been well if one of the conditions had limited the pressure to 40 lbs., *or*, that the committee would give great consideration to the machine working with the least pressure. I think, for the benefit of the coal trade, the names of the committee should have been make known. COAL PROPRIETOR.

Liverpool, Sept. 24.

THE IRISH COAL SUPPLY.

SIR,—Parties interested should feel grateful if Mr. Edward Hull, of the Geological Survey Office, Dublin, whose letter on this question appeared in the Supplement to last week's Journal, would furnish the process of calculation in full by which the official estimates were made out. The matter could be put quite plain by selecting one well-defined coal field—say, Tipperary—as an example for all the rest. The object of this note is no other than to gain information satisfactory in details on an important question. AMATEUR.

MINING IN NORTH STAFFORDSHIRE.

SIR,—In the Supplement to last week's Journal appears some correspondence between Mr. T. Wynne, Her Majesty's Inspector of Mines, and myself. Similar correspondence has also appeared in the Birmingham *Daily Post* of the 18th inst., and my reply on the 20th inst., in the same paper. A second letter of Mr. Wynne's also appeared on the 23d inst., and my reply on the 24th inst., copies of which I enclose; and as the *Mining Journal* will get into the hands of many gentlemen of the same profession as myself, I should feel much obliged if you will please (in justice to me) insert these letters in your valuable columns of the 28th inst. JAMES BROMLEY.

Moxley, Sept. 26.

SIR,—In your paper appears some correspondence between Mr. T. Wynne, Her Majesty's Inspector of Mines for the North Staffordshire district, and myself. I should not have troubled you further if that gentleman had taken the care to publish such correspondence correctly, and on his own responsibility, and not have brought in those gentlemen of the same profession as myself; and I shall feel obliged if you will kindly insert this letter in your issue of to-morrow.

Mr. Wynne charges me thus—"Giving a speech made by Mr. James Bromley, wherein he charges the mining engineers of North Staffordshire with working mines under their charges in what I should consider a dangerous, I may add, in a disgraceful condition." Such a charge I repudiate; and I challenge that gentleman or any other person to prove that I ever made such a statement, either at the Institute or elsewhere. Such a statement is calculated to mislead the public and the mining engineers of North Staffordshire, for whom I have too much respect to make any such charge against them.

Mr. Wynne, in his letter to Mr. Lees on Sept. 4, gives the words (as spoken by myself at a meeting)—"That at that hour there were many miners at work in that division of Staffordshire, with gas burning upon their lamps all day long." I may ask what comparison is there between this account and Mr. Wynne's remarks? This I will leave you and the public to judge.

My letter to Mr. Lees on Sept. 6 is a complete answer to my remarks. I beg to say that "such men as Mr. Bromley," who have the honour to hold such credentials as mining engineres, have too often to bear the responsibility of my remarks, in all gaseous mines, which is well known by all practical miners to be unavoidable.

Moxley, Sept. 19. JAMES BROMLEY.

SIR,—Your space is too valuable for me to occupy it, further than to remark that, if Mr. Bromley does really think a colliery "where men work with gas burning upon their lamps all day long" is not in a dangerous, and in a disgraceful, condition, all I can say is I pity him; and I have no doubt the mining engineers of North Stafford will look upon his assertions with the same charitable feelings.

Stone, Sept. 21. THOMAS WYNNE.

SIR,—Mr. Wynne says that he pities me if I think a colliery where men work with the gas burning on their lamps is not in a dangerous and in a disgraceful condition. I am not aware that I have ever said so. The words are Mr. Wynne's, as you will see in the published correspondence. Mr. Wynne, as a mining inspector, must know the difficulty which mining engineers have in getting their orders carried out, and that frequently pits are worked by the men when they are manifestly unsafe. The want of precaution of colliers is proverbial, and has frequently been noticed by Mr. Wynne in his reports; for in that for 1871 he says: "But still there is much to complain of in the way in which mines that are liable to give off explosive gases are carried on; and there does not appear to be any chance of improvement until the managers of both large and small concerns are brought to feel the heavy responsibility that rests upon them." And again: "There are others who simply turn men into a pit as a farmer would turn sheep into a pasture, and expect the collier to take the same care of himself as a sheep does." Now, if he thinks it necessary to make such remarks in his report, he admits that some mines in his district are worked when unsafe. My remarks amount simply to this, that the mines are sometimes worked in a dangerous manner, but I do not for a moment suppose that the mining engineer ordered it, but that the mines are so worked in direct contravention of their orders. I should not for a moment think of blaming any set of men who are so difficultly situated as mining engineers. Again, referring to Mr. Wynne's report, in speaking of the chartermasters he says—"And they are often listened to with more attention by the proprietor than is the manager."

In the discussion I remarked that there were many miners working with the gas burning upon their lamps; this shows that I consider it dangerous, but how the mining engineer is imported into the question is beyond by comprehension. The simple statement of a fact does not necessarily fix the blame on any set of men; if so, those to be blamed in this case would be the miners who worked in such an atmosphere, for on complaint they may get it improved. JAMES BROMLEY.

Moxley, Sept. 23.

SIR,—I notice a quotation of Mr. Bromley from Mr. Wynne's report on the North Staffordshire coal mines for the last year—"Mines that are liable to give off explosive gases." Inevitably this term is misapplied. Mines do not give off explosive gases, but hydrogen gas, and when mixed with the air in circulation in the mine this becomes carburetted hydrogen gas. The significance in the meaning of the two words is of much importance; and I am surprised at a gentleman in the high position that Mr. Wynne holds, or gentlemen of the same profession as Mr. Bromley, using such a term.—*Wednesbury, Sept.* 24. G. H. PICKBURN, Chemist.

CORNISH MINES, AND DRILLING MACHINES.

SIR,—Is it not incomprehensible that no serious and persevering efforts have been made by our Cornish managers to drive their levels more speedily than by the slow process of hand labour? I have seen accounts of the papers read at the Royal Cornwall Polytechnic Society, and trust that Cornish mine agents will awake to the necessity of perfecting these machines, if they are not already perfect, or what is desired. Two years ago I saw the Burleigh drill at work, and then was convinced that it was possible to sink shafts much more speedily than it is done at present. I am no engineer, and know little of mechanics, but I must have other reasons than I have yet heard to convince me that it is not possible to make a drill which shall be driven by compressed air in the longest cross-cuts or levels —the air serving as a valuable ventilator. Let Messrs. Teague, Thomas, Garby, Vivian, and other agents offer a premium of (say) 250*l.* for the best drill for driving levels 5 or 6 feet wide. Let arbitrators or judges be appointed from Her Majesty's Inspectors of Mines, that competitors may be assured full justice will be accorded to each.

I need not point out the necessity of mechanical agency during the present dearness of labour, &c., provided we wish to continue working mines; nay, under an energetic and scientific management, I should not despair of seeing mining again assume a position in public favour now nearly lost. Farmers see the necessity of employing threshing and reaping machines, and machines for drainage. Manufacturers have long ago dispensed with the physical and laborious labours of their operatives; why should not the miner assist himself by steam or compressed air? Why shall we not have a small drill connected by a flexible tube or pipe, so that the miner, after having drilled his one, two, or three holes and charged, shall take up his little engine, like a faithful servant, and place it beyond injury. It is not the necessity of the heavy blow, but the rapidity of the blow, that we require. The discovery of dynamite has diminished the necessity of drilling holes 1½ in. to ⅞ in.; hence the power required is less than half.

Why should not Sach's machine, of which Mr. Jordan spoke (and of which Mr. Darlington gave a description in the Supplement to the *Mining Journal* of Sept. 7) have a fair trial by some of our rich mines? There are poor ones that would try it had not long years of perseverance and calls well nigh exhausted their patience. The early application of some such machines to sink shafts, and drive cross-cuts and levels, is a *sind qua non* to the Cornish miner and the adventurer. The rise in labour cannot keep up unless more mineral be brought to surface, but must weary out the adventurers. Handloom weavers worked and worked for their 10s. to 12s. per week, until the power-loom displaced them, and then wages rose to 15s. from extra production, and are now in many cases more. Woolcombers worked their bodies to skeletons and their brains to a disconnected and useless mass of pulp, by long hours and sleepless nights. Farm labourers are emigrating because the farmer cannot employ for 12 months labour which he does not require more than three; and labour is so exhaustive in its demands for a month or two in mowing and reaping, that it is time it were done by the machine; but this will all tend to increase the wages of the skilled labourer remaining, who must know how to use the machine. So then with the Cornish miner—employ these machines, and the men will get more wages; the adventurers will have ground opened out in four months that used to take 12 months. Ore ground being laid open quickly, more tributers are put on, more tin returned in proportion, and miners and adventurers all better satisfied. H. W.

London, Sept., 1872.

COPPER MINES, AND COPPER ORES.

SIR,—While we observe Unions the length and breadth of the land, combinations in all directions increasing the price of labour, coal, tin, lead, zinc, and other minerals, and every other commercial commodity except copper, we cannot help asking the question—How is it that copper is in a declining state, and so miserably low? The producer of copper is called upon to pay an enormous and increased price for coals and labour, notwithstanding he is compelled month after month to accept lower prices for his ore, and still lower. The question is simple—How is it? What does it mean? First, then, the ticketing and sampling, which has been established a century, ought to be abolished. The agents of the smelters meet at the ticketing in Cornwall, and agree among themselves what lots of copper shall be taken by each party, and fix the price of the article beforehand; there is no legitimate competition, as was originally intended. This ticketing is become a mere sham, a plunder most foul on the shareholders in mines, and the ticketing or sampling at Swansea is carried on precisely on the same principle. The samples are sent in previously, and the ore, foreign or domestic, divided among the smelters by arrangement beforehand, or by a common understanding among the few, for be it remembered there are but very few smelters. Next of all there are speculators in copper, such as the speculators on the Stock Exchange called Bull and Bears. These parties speculate in the raw material, after being smelted, and not in the ores. The Bears prevail, they receive their differences, and are content. The Bulls are few in number, and care little or nothing about supporting the copper market.

It is obvious, then, that the producer of the ore is at the mercy of two merciless and swindling combinations. The producer is utterly powerless, and daily plundered, not only of profits but of the copper ore itself, inasmuch as the monthly cost of nearly all the copper mines exceed the actual receipts. One-third less copper ore put in the market would raise the standard to above 200. How long will the great body of miners stand such palpable peculations? Surely there is strength enough left among such an influential class of men as the miners to remedy the evil. The remedy is in their own hands. Will it not be wise to combine to coalese and take a pattern from the working man, and organise and establish a Copper Union. The producers by such a step would defy both smelter and speculator. Call periodical meetings, and fix the price and quantity for the market of copper ore, as the ironmasters do. The colliers raise less coal, and have put the price up 7s. per ton. The copper market ought to be in the hands of the producer by feeding the market with its requirements only; the mines then will become fairly remunerative, and it only requires a determined combination and an honest union of producers to counteract the evil practices going forward to depress the price of copper.

A COPPER MINE SHAREHOLDER.

INVESTMENTS IN LAND, RAILWAY, AND MINING PROPERTIES.

SIR,—The purchase of land with judgment, and the re-sale of it, especially if it be of such a character as enables the owner to divide it with advantage (as land suitable for building), forms one of the safest investments, and frequently pays a good, though not large, profit; it has, moreover, this advantage over all other investments by which large profits are made, that unless the buyer errs in his judgment very considerably he has nearly the value of his money, and he may rest assured that landed property, unless under very exceptional circumstances, will continue to increase in value, as it has done for many years past. Land possesses many valuable qualities not common to other property—it is indestructible; it does not become less productive if carefully managed, but usually more so; it generally confers a position on its proprietor which he would not otherwise command, the landlord of an estate worth 30,000*l.* usually taking a higher place in society than a landless owner of 30,000*l.* Consols. These are the advantages of an investment in land—but the great disadvantage is that it seldom pays more than 3 per cent. per annum, except in Ireland, where a somewhat higher rate is obtainable.

Railway shares form a favourite medium of investment. Preference Shares are generally safe investments, returning a fair rate of interest. Though such shares may be at one time the first charge upon the income of a company circumstances may arise to cause them to be postponed to a more favoured stock subsequently created, and to be considerably diminished in value in consequence; for example, the rolling-stock of a railway may become so depreciated and out of order that the traffic cannot be carried on. In such a case, if there is no fund out of which to provide new stock, the business of the company must cease, and all dividends, preference as well as ordinary, be suspended; or a new stock must be created by the issue of new preference shares, which it will probably be necessary to place in priority to those already *in esse*.

That large class of persons who at the present moment derive the bulk of their income from investments in the English Funds may now find almost equal security and a higher rate of interest by exchanging into English Debenture Stocks. The value of theseinvestments has been steadily increasing for some time; for whereas a few years ago they could be bought to pay 4½ per cent., the best rate now obtainable is 4 per cent. per annum. It may reasonably be expected that the current rate of progression in market value of the principal debenture stocks of our home railways will continue, and that after a time the rate of interest to the investor will diminish. To make the investment perfectly secure, the capital to be invested should be divided amongst four or six of the principal companies. The fact that the North-Western is now issuing a 4 per cent. debenture stock at a premium sufficiently corroborates the truth of our argument; but even in these times of dear money and dearer commodities the increase of income derivable from English Funds and English Railway Debenture Stocks is by no means unworthy of attention. The difference between the rates of interest is about 15s. per cent. per annum.

That numerous class of persons of whom we hear so much at present, and on whom high prices for fuel, provisions, and other necessaries of life press so unduly—persons with fixed, unvarying incomes—will find it much to their advantage to examine into the advantages afforded by dividend and progressive mines. Without in any appreciable degree infringing on the security of their capital they may easily largely increase their annual income; whilst, with no more than a fair business risk they may more than double their incomes, and so be enabled to cope with the exigencies of the times. Roman Gravels, Tincroft, Dolcoath, and other equally well-established dividend mines are essentially free from risk, and give a handsome income. Mines in a younger stage of development, such as Van Consols, Penstruthal, Wheal Whisper, North Pool, Boscaswell Downs, &c., may be bought at very low rates, and are certain to yield within a short period dividends of large amount. One important point investors should not fail to make enquiries upon is whether the present exorbitant prices of coal and iron affect the dividend-producing powers of the mines they select. Properties worked by water-power have an immense advantage in this particular. Van Consols and Wheal Whisper are worked entirely by the aid of water-power, and thus a vast economy is effected in the working cost. Those who desire speedy dividends should only invest in mines returning ore to market, and thus paying current costs. Boscaswell Downs, one of the most promising setts in Cornwall, is well favoured in this particular. Regularly increasing monthly sales of tin are made. The last month's sale produced nearly 1200*l.* more than sufficient to meet expenses, notwithstanding the heavy outlay being made in laying open this extensive sett in a proper manner. The agent calculates very shortly on increasing the present monthly sales of about 14 to 15 tons to 30 tons at least. The difference between these two results means very large dividends to the shareholders, and greatly enhanced value of the shares.

The tendency of the times is undoubtedly to cause investors to seek a more remunerative interest on their capital than is to be obtained through the ordinary mediums of investment, and from this fact we believe supporters of legitimate mining may confidently predict that mining adventures will, without doubt, take a higher place in public estimation than they have yet ever assumed, and practical experience of the profits derivable from the enterprise will assuredly increase this feeling of confidence on the part of the investing public. At the same time, those interested in this important industry should not forget how much of the prosperity now enjoyed by mines and mining is due to the publicity given to their progress and position by the *Mining Journal*, which has for so many years protected the interests of investors, and diffused so large an amount of useful and valuable information regarding the most important industry of this great manufacturing country. T. W. HARLAND AND CO.

Gresham House, Sept. 25.

THE SCIENCE OF INVESTMENTS.

EXCHANGE OF SECURITIES.

SIR,—The science of investments, to be of use, must be searching, and the true merits and value of properties be ascertained and practically utilised. An investor in British Government Funds—say, Consols, at 93*l.*—receives 3*2l.* 5s. 2d. interest for every 1000*l.* cash; in East India Guaranteed Five per Cents., at 109*l.*, the sum of 45*l.* 17s. 6d. Great Northern, London and North-Western, the Midland, and North-Eastern debenture stocks are practically as secure as either Consols or East India Government securities, and pay the investor of 1000*l.* on an average fully 45*l.* annually. Yet, theoretically, they are discountenanced, although trustees and women are as safe and as well secured in these four railway debentures as in Consols itself, for any political or domestic calamity that could affect the vital security of the former would unquestionably upheave the corner stone of the British empire. Some months ago I strongly recommended my friends to embark in South Crofty shares at 25*l.*, and up to 40*l.*; yet they hesitated, until the price advanced to 100*l.*, 110*l.* per 937th share, when they grasped at the shadow, and bought with avidity, which promised to send the price still higher. The market quotations have since receded to 75*l.*, 77½*l.*, and, without exception, everyone wants to sell. In a falling market, as well as in a rising one, everyone follows the leader; hence the disciple of the "Science of Investments" has breathing time for reflection, and is enabled, through the recklessness of the majority, to single out the time both to embark and to realise with advantage. Through panic South Frances shares fell to 3*l.*, 5*l.*, and no one could be tempted to buy. A few shares bought by a speculative dealer raised the value to 12*l.*, and, doubtless, so soon as the "executive" become purged and efficient the public will gain confidence through increased returns and lessened expenditure. At a time when such properties as Carn Brea, Kitty (St. Agnes), and West Basset stand boldly forward as instances of enhanced market value, through unquestionable sound and practical management displacing chronic and feeble apathy and decadence; no one can reflect upon the position of many other Cornish mines without exclaiming, with the inspiration of Byron—

"'Tis Greece, but living Greece no more!"

Can anyone, possessing a knowledge of the "Science of Investments," inform me of the slightest good resulting to shareholders for the last 20 years through continuing the workings at North Roskear, North Crofty, St. Ives Consols, and other similar mines—has a single £1 profit been made? Has any one proprietor been advantaged, exclusive of merchants, employees, and workmen? One could with equal propriety continue a manufactory or brick-field for a quarter of a century for the benefit of officers and labourers, without the slightest remuneration for the capital embarked—nay, having the happy privilege of responding to an occasional call, in order to keep the cumbrous machinery in gear. Again, Treleigh Wood is selling for 150,000*l.*—a short time ago at 200,000*l.*—while positively Wheal Owles is selling for 32,000*l.* only. Allow me to ask the pupil of the "Science of Investments" which is the best tin mine of the two? Trumpet Consols is paying 2000*l.* a quarter, and is selling at about 30,000*l.*; Aberdaunant is quoted at 75,000*l.* to 80,000*l.*; and East Llangynog at 200,000*l.* Are the respective values of these properties based on dividends, or pamphlets and circulars? We know that the first pays 8000*l.* cash dividends annually, but we have never heard of any other than paper currency in connection with the two latter. Boscaswell Downs is another instance of a passive, dormant, yet valuable property long neglected. Practical management has resuscitated and rendered profitable riches discovered, though not utilised, during fully a quarter of a century. "Example" is contagious, and often the harbinger of success to others. Mr. Milstead has inspired action and *esprit* in the St. Just district, as Mr. West has done in the St. Austell. Both are rewarded—the former at first in the Boscaswell, and the latter in the last instance in the Phœnix. There are several mines well worthy the attention of capitalists all but unrecognised by the market dealers in shares. We hear daily of Van Consols, Penstruthal, Grenville, New Rosewarne, and Terras, which sell together for 350,000*l.*, but we rarely hear of North Pool, 10,000*l.*; Trannack, West Trumpet, 10,000*l.*; Kitty (Uny Lelant), 2500*l.*; Botallack, 35,000*l.*; Providence, 27,000*l.*; Lovell, 25,000*l.*; West Tolgus, 10,000*l.*; Emily Henrietta, 2500*l.*; or Wheal Luey, 7000*l.*

Investors in mines would do well to consult practical authorities before embarking into Cornish or Welsh adventures. The mines that pay most are generally best managed, and mostly worked by local capitalists. It was a local miner who resuscitated Tincroft, Carn Brea, South Carn Brea, and Kitty (St. Agnes). A Cornish man who grasped West Basset at the proper moment, and raised the value from 3000*l.* to 60,000*l.* Dolcoath was countenanced only by local shareholders, as also were Phœnix, South Caradon, Fowey Consols, Par Consols, and similar sterling properties. The shareholders were in these enriched through dividends, and grew wealthy through honest, healthy enterprise—in fact, these properties remind one of Consols and Exchequer Bills, whilst many a market adventure, both as regard merits and quoted prices, breathe of Mexican and Spanish Deferred Bonds. So far at least as dividends are concerned, one might as well seek them from copper or tin out of a brick-field as to hope for them from many highly-vaunted schemes floated by the "innocent babes" constituting the Mining Share Market. R. TREDINNICK,

The Exchange, Lombard-street, Sept. 25. Consulting Mining Engineer.

WHAT TO SELECT—WHAT TO AVOID.—No. XXIX.

SIR,—About this time last year, when the depression in all description of securities was far greater than at present, the writer drew the special attention of investors to the importance of seizing the opportunity of selecting sound mines while values ruled low, reminding investors that mining possesses a vitality co-existent and co-equal with the material industry and commerce of the world; and that the additional purposes to which metals are being almost daily applied naturally create a constantly increasing consumption, which must augment proportionately with the development of trade and and progress of civilisation.

The depression of last year, assuming at one time the virulent character of a panic, was followed by high prices, and an unusual activity bordering upon mania, the reaction of which is now observable in the comparative depression so general throughout all stock and share markets. The peculiarity in the present condition of the market, however, arises rather from that absence of business common at this period of the year than from any other cause; so that the reanimation that must supervene will, for obvious reasons, be rapid and comparatively permanent. For some time past there have been unmistakable evidences of over-speculation, which has, of course, contributed to the present state of things; but the results are being quickly dissipated. The recent failures among speculators in copper have brought about a very healthy market, and prices, although lower, are firm in tone, and with a clearer horizon higher quotations may reasonably be looked for. Tin may probably decline somewhat in value, but a sharp reaction must soon ensue, while the demand for lead is in no way diminishing. Hence, the writer repeats the advice he gave last autumn—that the time has again arrived for investors and speculators to turn their attention to sound low-priced shares, for there are many selling far below their real and intrinsic value.

Observation attests that panics and manias occur and recur with an almost pendulum-like regularity. The panic as surely follows the

mania as the mania the panic, and as surely does each event offer most favourable opportunities for making money. The inexperienced are alarmed by the one, and allured by the other; not so, however, the experienced, who eagerly realise during a period of inflation, and as eagerly purchase when others are sacrificing their investments at ruinous prices, fearful of some imaginary calamity, which never arises. To possess the moral courage to sell in an inflated market, and to buy amid wild rumours, when people are running about in a semi-frantic condition, requires the education of experience; it is during these ever recurring events that sound counsel is absolutely needed from those who, by a lengthened experience, are qualified to properly advise.

These remarks are especially applicable just now, when the holders of shares in good dividend and sound progressive mines are timid of results, because of the decline in market value, which in nine cases out of ten is really more nominal than real, arising mostly not from any altered condition of the respective mines, nor from any appreciable decrease in the commercial value of their produce, but from the generally inate condition of the investment market.

ASSHETON.—During the writer's recent visit to the different Welsh lead mines at present before the public few, if any, either from actual position or prospects, to say nothing of the value of the ore already discovered, better deserve the immediate attention of investors than this mine. It may be remembered that some two or three years since, during the *furore* for lead mines, the shares of this company were in active demand at prices ranging between 16*l.* and 18*l.* At that time the value of the mine was based solely upon its encouraging prospects; but now those prospects have been fully realised by valuable courses of ore being opened up in three separate levels, the deepest of which is only 50 fms. from surface, or 30 fms. under adit. When it is mentioned that the several points of operations are producing no less than 14 tons of lead and blende per fathom, of the aggregate value of between 160*l.* and 170*l.* per fathom, one may fairly say that there is not another progressive lead mine in any way equal to Assheton selling at such an exceedingly low price. It is strange that when this mine, so to speak, existed upon prospects alone it commanded a market value of something like 216,000*l.*, but now that it is rapidly approaching a dividend-paying condition, the development for a long time past having been prosecuted more with a view of rendering the terms permanently remunerative than to produce ephemeral results, its aggregate market value does not exceed 50,000*l.*! This may fairly be classed among neglected investments, which well deserve the attention of investors and capitalists. It is not much to say, judging by the extraordinary developments that have been made during the management of Capt. Johns (which the writer himself beheld when underground) that Assheton will at no distant date be placed in the same successful category as such mines as Roman Gravels and Tankerville.

Pinner's Hall, Old Broad-street. FREDK. WM. MANSELL.

ON PRACTICAL MINING—MR. N. ENNOR'S VIEWS—No. II.

SIMONWARD MINE, NOW CALLED ST. BREWARD CONSOLS.

SIR,—In my last remarks on this promising lode, in the Supplement to the Journal of Aug. 31, I noticed that a captain from the Far West had examined the lode, the appearance of which he could say nothing against; but he remarked that he could say but little in favour of it, as there never had been a dividend-paying mine in the district. These remarks caused me to take up this subject, and endeavour to show that such vague hints are based on an unsound foundation. I will not here raise the question as to the age of the world; it matters not whether its age is 10,000,000 or 2000 years, but it is known to all who have read and studied the history of English mining that two centuries back a paying copper mine was not known in the West of England, but tin mines were extensively worked for over ten centuries; but I am not aware that a good discovery of copper was ever made in one of these mines; neither am I that recent clearings out of old mines have shown that the ancients ever discovered copper to value. It may be said that they did not mine deep eneugh to find copper. I contend they did, as I have seen a number of prolific copper lodes laid open long before they were worked to half the depth the ancients worked tin mines; and millions of tons of copper have recently been found near and about these old tin works. If we discard the old Cornish adage, "Where it is, there it is," it would open the way for some of the better informed to argue that the ancients did find copper, but it was worthless, which accounts for it not being worked; but to me it is a far more reasonable conclusion that its bulk in Cornish mines has grown within the last 200 years. A watchful practical knows well a young and thriving lode from an old hard, dried one that the ore is decomposing from and leaving.

I will not go further into this subject here, but follow up copper discoveries, remarking that I remember old men, when meeting of an evening to tell ghost stories and fairy tales, closing their evening discussion on mining with remarks as to new copper finds, when they would come to an almost unanimous decision that lodes contained no copper east of Truro Bridge; when suddenly a good copper lode was found at Wheal Friendship, Devon, and shortly after at Great Crinnis Mine I may say a gulf of copper was cut. I myself worked in it before an engine was fixed upon it. They had been mining in the district for hundreds of years, but found no copper to value; this was a pioneer and paying mine. Copper mines were to be seen afterwards in divers directions.

I need not stop to point out paying mines, but move on to Calstock. The discovery of copper in Devon and at St. Austell caused Mr. Fox and Mr. Williams to look around, and they took up the old Gunnislake, Calstock, a mine working for half a century, and an old call-paying mine, the Drone, only a few fathoms west, and cut copper there, and had a dividend-paying mine for a number of years. This led others on to speculate, when the Canel and Crowndale Mines were found. Since then Holmbush, Devon Consols, Bedford United, Prince of Wales, and Hingston Down have been found. I opened Hingston Down myself for a man we then called the old Grand Signor Fox. He looked at it, and said there was no tin there He was looking for tin; the lode showed gossan, and he ordered me to fill in the pit at once. The ancients had worked down about 25 fms.. About this time a Mr. Mudge and others, of Truro, put on Marke Valley, in the Liskeard district. They were held up to ridicule by the would-be knowing ones for mining for copper in such a district. More recently still my father, with others, worked the Phœnix Mine. He spent almost his last shilling upon it, when a Mr. Smith, the principal holder, gave in. Then my father and another took up the present South Caradon, had the deeds for it, and commenced to drive the adit, when one of the knowing ones from the West was sent by a Plymouth shareholder to inspect it, and he condemned the district, and the company, chiefly Plymouth and Devonport men, gave in. My father died shortly after, as did the man who held the deed, when his widow sold the deed to an old wandering captain for 10s. 6d., on the condition that if the mine turned up a trump she was to be well paid. The present company cut this extraordinary deposit of copper in driving my father's adit. They were then holding this very deed.

Then, I may be asked what is to be said, *pro* and *con.*, for districts? I say that tin or copper are solely dependent upon the strata of the district. I will take the West of Cornwall, where all good mines are in what is called the primitive rock—granite. Clay-slate gets off the granite from two to three miles, and it is into lead and antimony. Then we will move on to St. Austell, where the ore is found in the same primitive rock; then get on to Callington, Calstock, and Tavistock districts, where also all the paying mines are found in the granite. The reader must not suppose that I assert all the lodes in these districts are good and paying ones. Were all the mines therein left to my decision, I should say abandon fully half at once, find new ones, work only the right sort of old mines. A lode in the very best district will not bear paying copper if it is not running in the right direction, or about junctions, where many substances and electricity are brought to bear at a particular point. Tin will form in these districts on the back of nearly every lode, and particularly over and under the extreme points of copper formations, and about nearly every junction.

I think I have said enough on these points, and again turn to the Simonward Mine. Here is a new district, a district condemned by, I may say, a recent narrow-minded surveyor. Why? Because the learned man says no good mine has been found near it. This I admit, but only one mine has been laid open, and this shows promising burrows; thousands of tons have been raised from it. I said before that I lived within three miles of it for 50 years; but I must say that I was never very sanguine about this mine. I had daily information of what was doing, with the appearance of the lode, and its direction, which was not altogether a bearing one: it produced ore just such as entices well-intended speculators. This, with the captain's flattering report, caused them to persevere, but ore only formed there from some intersection; the lode depends upon itself, and is not an ore-bearing one. But this does not condemn the district. I contend that it is a good one; it is on the very junction of the granite and slate, and if the lodes are found in it with the right bearing they will be productive, and particularly so about the junctions. The lode recently found has the right bearing, and everything about it that can be wished for; and there may be scores of lodes in the district not yet seen, as miles of the north side of the granite range are still unexplored.

Before I close this letter I would make a remark upon one other district, situated near the Indian Queen, Blue Anchor, and Summer Court. It contains a number of lodes, all bearing tin. Three or four of them have had steam-engines upon them, but neither have turned up trumps, through that does not satisfy me that two or three square miles full of lodes, and on the junction of granite and slate, does not contain good ore at certain points. In the best of districts one mine out of ten a trump is a fair average.

I notice the letters in the Journal entitled "What to Select—What to Avoid." These terms might be advantageously used in mining speculations. No one knows what to work and what to abandon. It is working mines which never had a chance of paying that cripples mining men.—*St. Teath, Sept.* 23. N. ENNOR.

ST. JUST, NEAR PENZANCE.

SIR,—In the "Imperial Gazeteer" St. Just is said to be "indifferently supplied with water;" but the author gives the inhabitants credit for superior intelligence as miners. The church village, or "church town," contains about 2000 or 2500 inhabitants, who are chiefly supplied with water taken from wells below the village, the carriage of which up the hill is laborious. As there are in the village or town several very intelligent and wealthy gentlemen, I wonder they have not taken ere this some measures for supplying the town with water by artificial means—that is to say, by water-works of some kind. There are in the parish north of the town several populous villages, containing, in the aggregate, about 3000 persons, most of whom are also destitute of a convenient water supply. Those villages are Nancherrow, Tregaseal, Truthwell, Botallack, Trewellard, Carnyorth, Pendeen, and Bejewyan, besides some smaller places on the roadside between St. Just and Pendeen. I think that for such a population within the space of two miles there should be a supply of water from mains connected with a storeage reservoir, high enough to command all the places referred to. There is a good site near the town for a reservior. The town, being on high ground, cannot be well supplied on the gravitation principle; the water must, therefore, be pumped up in the reservoir by a small steam-engine, which would not be required to work constantly.

Under recent Acts of Parliament there are afforded great facilities for carrying out water-works, sewerage, &c.; sewerage in some places in St. Just is greatly needed, and other sanitary measures. A district comprising the places above named should be marked out, and placed under the Local Government or Health of Towns Acts; or, for supplying the places with water, a company might be formed, with a capital of 5000*l.*, which I believe would be sufficient for the execution of the works. I have no doubt that the income would pay a fair dividend to the shareholders, after deducting the working expenses. The miners in general would gladly pay 1½d. per week for water. Merchants, mine agents, and others, who are not ranked with the labouring classes, would, of course, pay more, proportioned by the rating of the houses. I venture to suggest the imporance of the subject of water supply, and hope that the gentry of the district will give it their consideration.—*St. Just, Sept.* 17. R. SYMONS.

WHEAL GRENVILLE.

SIR,—Your proverbial good nature will, I am sure, allow me a reply to "Argus's" letter, in the Supplement to last week's Journal, and after this I will trouble you no more upon the subject. I had thought my former letter would have been a sufficient refutation of "Argus's" statements; but he seems to be one of those who, having made erroneous assertions, instead of admitting them, persists in adding to his errors by an obstinate blindness to facts. Notwithstanding after an investigation of the matters in dispute he communicated the result of his researches to you two years ago, he has now been compelled to call in the aid of a "first practical agent" to enlighten him. "Argus" says that I omitted to mention that the northern shaft is going down further from the South Condurrow lode every fathom sunk from the 50 to the 110. I certainly did not mention this, simply because *the shaft is getting nearer to the lode every fathom it is sunk.* It was commenced long before the lode in South Condurrow was discovered, and is going down on the underlie of our old lode, which underlies about 2 ft. in a fathom. South Condurrow lode underlies 6 ft. or more in a fathom; and, as I said in my former letter, it will, in all probability, come into the shaft (which is now down to the 120 fathom level) at or about the 130 fm. level. The statement made by "Argus" that this shaft is *going down away from South Condurrow lode*, necessitating future cross-cuts, is incorrect. As regards South Condurrow engine being overpowered when "Argus" was at the mine in 1871, if anyone will take the trouble to refer to your Journal of that month and for months after they will see from the South Condurrow mine agent's report that the engine *was not* overpowered. Possibly when "Argus" was at the mine the whim-engine was not drawing stuff for an hour or two, and in his anxiety to communicate the result of his investigations to you he mistook it for the pumping-engine. However his error has arisen, there are the agent's reports in your Journal, which unmistakeably deny his assertion.

As to the questions put to the "first practical agent" by your correspondent, that referring to the rods is so absurd that the "first practical's" risibility must have been much moved on reading it. I wonder what our agents would think of me if I were to write them in this strain—"You are working the boilers of the engine at a pressure of 20 lbs. per square inch; if the pressure should be raised to 70 lbs., and the boilers blow up, would it not seriously impede the working of the mine?" And yet this is the spirit of the question put by "Argus" to his "first practical agent." Of course, if rods break, boilers burst, or any similar accident occurs in any mine the workings are impeded, and how could we expect Wheal Grenville to be an exception to this natural effect; but, as the "first practical" truly observes, the rods are pumping the water 20 fms. only—that is, from the 140 cross-cut to the 120 fm. level, from which level it is brought to surface "under the nose of the bob;" and, therefore, there is no particular strain upon them. With regard to the question of future water, these rods are likely to be required to pump for the 20 fathoms mentioned. If anyone will take the trouble to read our agents' reports they will see that, although every week we are getting further into the lode, we are not inconvenienced by the water, and although "Argus's" "first practical" thinks that as we get further into the lode the water will increase, our agents see no reason for this assumption—and who must be the better judge—experienced agents who see the cross-cut daily, or a "first practical" who sees it once or twice in twelve months? Every man has a perfect right to express his opinion; but to show you, Mr. Editor, the value of *disinterested* opinions of mine water, when we decided to erect a 30-in. engine at Treleigh Wood Mine everybody laughed at the idea, and it was stated that we might as well try to drain the sea with a limpet-shell as to fork Treleigh Wood with such an engine. Well, what is the result?—the shaft is down more than 70 fms. from surface, the engine going two strokes only per minute, and the water is so little that we have had to make three large reservoirs to husband the water to ensure sufficient for dressing purposes. You will, perhaps, say—What has this to do with Wheal Grenville? Nothing, I admit; but it shows the value to be attached to the opinions of "first practical agents," or any other person, as to the quantity of water likely to be met with in a lode. Our managing agent of Wheal Grenville inspected South Condurrow a few days since, and he is of opinion that we are not taking any of the water of that mine, and he calls attention to this fact, that whilst South Condurrow engine is going seven strokes per minute to keep the water to the 82 in this mine, Wheal Grenville is being drained 140 fms. deep by its engine at four strokes per minute. Our "first practical" says that at the time we were driving the 110 cross-cut he expressed his surprise at our doing so, to run the risk of getting South Condurrow water without getting any "backs" if we cut the lode. How could he form an opinion as to the water when the South Condurrow lode has never been seen below the 82, and the workings at that mine being fathoms to the east of Wheal Grenville 110 cross-cut; although "Argus" persists that the cross-cut was opposite the rich bunch of tin in South Condurrow. *It is not, and never was, by many fathoms,* and as I said in my former letter, the cross cut was stopped because our agents thought the men would be better employed in sinking the shaft. No one could then say at what point the South Condurrow lode would come into Wheal Grenville; many persons, as you know, Mr. Editor, asserted that it could not by any possible means be found in Wheal Grenville, but now it has been cut at the 140 fm. level, and so much further into the sett than anyone connected with the mine ever anticipated, will the "first practical" deny that had we persevered with the 110 cross-cut it is extremely probable we should have had more "backs" upon the lode than was calculated upon? I know our "first practical agent," and he knows me; and I should like to see his replies to the whole of "Argus's" questions, instead of the three we have been favoured with.

As "Argus" says, "The points at issue are very simple—so simple that anyone who unprejudiced and unbiassed will take the trouble to investigate them on the mine will see at a glance who is right and who is wrong. It is well known that parties were induced to part with their shares upon the representation that *if* South Condurrow lode should be cut in Wheal Grenville a new shaft and a new engine would be required at a heavy expense to the mine to work the lode. As secretary to the mine, it was my duty to show the fallacy of these statements, and show anyone who "is and has been a shareholder in the mine for nearly 20 years" can seek to deny my facts, and depute a "first practical agent" to visit the mine specially to endeavour to show I am wrong, is to me inexplicable. If, as "Argus" now says, his "strictures were not on the mine, but on the management," I will simply observe that the management of the mine rests with the agents. These agents, "Argus" says, "are silent;" but they will tell anyone who enquires of them that what I have written is the plain unadorned truth, and their own honest opinions and convictions; and even the "first practical agent," who knows their experience and integrity as well as I do, will, I am certain, admit that the management of the mine could not rest with two more competent and trustworthy persons.

13, *George-yard, Lombard-street.* JOHN WATSON.

TIN IN THE CARADON DISTRICT.

SIR,—I had hoped that my few remarks would have induced some abler pen than mine to have addressed you. As none has as yet done so I venture to enter a little more minutely into this important matter. The earliest historians of Cornwall tell us that tin workings have ever held a prominent position in the county, and contemporary accounts show that this county was the source from which the world was first supplied with that valuable metal—tin. Those old writers also hand down to us interesting accounts of the mode of working to obtain the ore at different periods, showing us that step by step an all-wise Providence so enlightened us and expanded our ideas, generation after generation, as the necessities of each demanded, as to enable us successfully to follow and win the ores from nature's most hidden recesses. That the Phœnicians came to our shores for tin, and that the mineral to supply them was obtained by streaming, no one doubts Streaming consists of a simple mode of washing the gravel deposited in the valleys by floods of an earlier date, and extracting the tin therefrom. After a time these deposits were comparatively exhausted, and the tinner driven to search for a supply elsewhere. He was not lacking in judgment; he reasoned that the tin found in the low ground had been brought there by the washings from some rocks higher up, where nature had originally planted the ores. He searched and found these rocks, and the lodes running through them. Here, again, he came upon the tin, and we have only to cast our eyes over the surface of the country to see how skilfully he did his work; indeed, we rarely come across the back of a tinlode that the old men had not previously worked to the greatest extent that their imperfect machinery would permit. But fortunately for us, as "necessity is the mother of invention," so the requisite appliances for pumping and winding have been perfected, until at the present time depth is almost a secondary consideration; indeed, a few inches added to the size of the cylinders and pumps, a little more wire-rope, and a *man-engine* appears to be the only practical difference between obtaining tin from open workings and 300 fms. deep; and from what is now being done it would appear that the excess of richness in depth far exceeds the difference in the cost of production. Now, anyone who has a knowledge of the run of ground on the northern side of the Caradon Hill, and of what has been and is now being done there, will readily see that the foregoing remarks are as applicable to this as they are to the great tin-producing district west of Truro. Liskeard was one of the ancient "coinage" towns, which is of itself sufficient proof of the productiveness of the immediate neighbourhood, without looking at the confirmation given by the extensive workings in the valleys and on the lodes, which were the precursors of deep mining and increased riches in West Cornwall, and so we are beginning to find them here. If any of your readers are sceptical I would ask them to visit the Phœnix Mines and judge for themselves. They will there find evidence to remove every doubt; there are the shallow workings; and there are also the deep, which, directed as they are by the consummate skill of the chief proprietor, show that with modern machinery and energy deep mining is, financially considered, rendered highly satisfactory, and we want not facts to prove this, for have we not such mines as Dolcoath, Tincroft, Phœnix, and many others, making splendid profits from ores broken down more than 200 fms. from the surface, and in them we have that stability which renders them sound *investments*, and not *speculations.*

Seeing these things, and particularly the results at Phœnix Mines, I am induced to draw a little careful attention to Marke Valley. First, look at the surface; there you will see the old stream works, there also the course of the lodes clearly defined by very extensive shallow workings done by the ancient workers; then enquire into what followed, for much of it has been done within the recollection of those now living, and you will learn that the lodes were worked away for tin as deep as they could be drained by adit levels; then deeper workings discovered. The copper in the great lode called "Sarum" (probably so named from the fact of the principal proprietors being Salisbury people), and now what are we told? Why nothing less than that under the copper is the tin again; not in small quantities, but such as set aside all doubt that this mine will soon be reckoned amongst the established tin mines of the county. My authority tells me that this "Sarum" lode resembles the Phœnix lode in a remarkable degree, carrying what is termed the copper part, with a great tin-capel on the north side, in which that mineral is embedded; and, further, a stone of tin from this, placed by one from the Phœnix capels, would lead any person to declare that they were broken at the same time, and, in fact, were of the same stone originally. I believe the committee have had the mine carefully examined by some agents who are well known as men of judgment and caution, as well as having a thorough knowledge of tin; therefore we may look forward with some interest to the publication of their reports.—*Liskeard, Sept.* 25. OBSERVER.

GROGWINION LEAD MINING COMPANY.

SIR,—In reply to the letter of "Old Miner," in the Supplement to last week's Journal, I thank him for aiding me in my efforts to place the great mineral wealth of this mine in a clear and simple way before the public. The run of ore ground to the east of the deep cross-cut adit, known as "Ellis's workings," had not escaped my attention, and I would have brought it under the notice of the meeting, but I thought enough had been said to prove the undoubted value of this mine.

I find that the late Mr. M. Francis was at one time engaged in surveying this property, and that he stated in his report the rich part of Ellis's workings could be reached in 35 fms. driving, and that a profit of 300*l.* per month would be realised from this portion of the property alone; he also estimates the ore ground in Bonsall's workings left standing as over 100 fms. long, and worth 2 tons per fathom, and from this part of the mine he stated a profit of 800*l.* per month can be obtained. I am disposed to place great confidence in these statements, inasmuch as we have found in other parts of the mine that his measurements and predictions have been fully realised, and we have, therefore, a fair and reasonable expectation of adding to our profits about 13,000*l.* per annum from these two points on the No. 1 lode, and totally apart from the profits to be obtained from the No. 3 lode. Should any person think me over sanguine in the estimates I have formed as to the yield of ore from this mine, let me refer him to an old document in the British Museum, entitled "An Account of the Crown Manor of Cwmthyn, in the county of Cardigan, humbly presented to the Right Hon. Henry Arthur Herbert, Earl of Powis," dated about 1751. He will there find much interesting matter, and some estimates of the yield of this mine far in excess of anything we have stated.

THE CHAIRMAN OF THE MEETING, AND A
Nicholas-lane, Sept. 25. HOLDER OF ABOUT 3000 SHARES.

THE BOUNDARY QUESTION—SOUTH CROFTY AND EAST POOL.

SIR,—My attention has just been directed to a letter in the Supplement to your valuable Journal of Sept. 14, signed "Captain," and probably sent from Camborne on Sept. 10. Since this gentleman is evidently acquainted with "ways and means," and lays claim to an ability on most matters his friends may reasonably doubt the possession of, I may be excused, knowing, as I do, most of the agents in Camborne, if I tell you it is within the range of possibility that this "Captain" may live in some other locality, and goes to Camborne occasionally for other purposes, which I need not name. Sir, "the hands are the hands of Esau;" but what of the voice? Certainly he has spoken out; for out of the abundance he has, who could but speak? I think it is but right and proper "Captain," or anyone who knows a captain's duty, should speak, and most strongly too, against evils in mining, commerce, or any department, on exposing which the welfare of a locality greatly depend. I, for one, would join any man, or number of men, in thanking him for it. But before the public are asked to decide on matters to which its attention is now called by this letter, I think it may not be amiss to ask if your correspondent is sufficiently well informed of the capability (I do not mean of himself, but of other mining agents of this county, besides "Capt. John and Jos.") of keeping up a dialling of a mine, or of defining the boundary between any two setts, as well as some of the disinterested surveyors are? I question from his writing if he be. I venture, however, to think there are such to be found even in Cornwall, believing others entertain the same opinion. I think it is a little ungracious for him to tender such advice, and thus try to lessen the public confidence in all mine agents but himself.

Sir, I have nothing to do with Cook's Kitchen, Tincroft, Boscean Mines, or Wheal Owles. No; nor even with South Frances Mine; but having to do with East Pool, and wishing to protect my standing as mine agent, and to retain the confidence so long reposed in me by my employers, I wish to give such information to distant as local shareholders are possessed of, and thus ward off any impression "Captain's" letter may possibly produce. He there intimates that the East Pool Company, through the blundering or greed of the agent, consented to pay South Wheal Crofty for an encroachment no less a sum than 2102*l.* 11s. 2d. Sir, since my Company for an encroachment no less a sum than 2102*l.* 11s. 2d. Sir, since my salary was no more for the taking away of ground that belonged to South Wheal Crofty, I see nothing, and I assure you I feel nothing, that would be anything like a motive to be voracious after property belonging to one company to benefit another; nor do I believe there was anything of the sort entertained by South Crofty agents in their encroachment on East Pool. I, therefore, in behalf of myself and fellow-agents, repudiate such a remark, as being one not only gratuitously given, but uncalled for, because damaging to character. As to mistakes and blunders, these are so common, not only in dialling, but in every department of mining operations, that I venture to affirm they will be heard of after "Captain," the perfect and upright in these matters, is dead and gone.

I acknowledge my liability to err, but fail to see the justice of fathering me with a responsibility that is equally borne, and willingly shared, by my comrades. I never knew such beautiful epithets as "splendid dialler" and "mappist extraordinary" belonged to me. I certainly lay claim to nothing of the sort; but at the same time I venture to assert, in behalf of my colleagues as well as myself, that few mines have their plans more accurately kept, or their dialling more promptly attended to, than East Pool has. It is true we have to pay 2102*l.* 11s. 2d. to the adventurers of South Wheal Crofty, and that amount as a balance after the deduction of South Wheal Crofty encroachment. This is certainly a large amount, and, so looked at, would lead the public to a conclusion by no means warranted by taking another, and what I consider more correct, view of it. Unfortunately for us, the lode in this place was large and valuable, but, notwithstanding the award, I consider it was in no wise approaching in value to the amount levied. In this we are borne out by our actual returns and the opinion of many respectable mine agents of the county, which will be further corroborated by the returns from South Wheal Crofty. The encroached ground averaged a little over 7 ft. in length for 8 fathoms high, and so wide as to make 41½ cubic fathoms. Deducting the ground taken from us (about 10 fathoms), there will be a difference of a little over 30 fms. Too much, I will admit; but seeing there was a considerable difference with even professional diallers (it being such a distance from shaft, and so complicated), and looking at the increased angle east about this point in the boundary hedge lessening our length of lode at the 140, as compared with the 130, ought, I think, to induce "Captain" to be charitable, and look at the encroachment—and ask the public to do the same—*as a mistake,* and not to attribute motives so base and contemptible as he has done.

Sir, your correspondent has been told, perhaps seen, the account-house hung around with pictures, but certainly not with such as he named—pictures mineralo-

gical and geological, nor with such as prizes were given for by the Royal Cornwall Polytechnic Society, but with the working plan of the mine, plan of stamps, floors, and sections of the different lodes. Nothing very remarkable about that to other agents, whatever it may be to "Captain." Pictures on the walls in that Hall of Art and Science one may see. Of course, where there are so many, one with eyesight cannot help seeing them; but to see "downy pupils" of the Mining School pointing gleefully, or in a spirit as your correspondent would have us believe, at the handiwork of an advanced mine captain may have a place in his imagination, but not in fact. I have sent some sections to the above society of a geological character, whose merits may be best judged of by the award of impartial and capable judges. I will allow such a testimony to speak for itself. I think it necessary, however, to inform the public that these sections, models, or any other work prepared for the Polytechnic was done in my leisure hours. Walking to the mine as I do, one week by day and the alternate week by night, gives me a little time for such work as I delight in. It is then, and not a minute from the hours of my mine duty, that these are done; and the insinuation of there being an absence of "goodness" in sinking shafts crooked, driving inclined planes, &c., instead of the opposite, is such an absurdity as may be best proved by a further inspection of East Pool Mine.

Sir, I know not the object your correspondent has in view in writing this letter, nor do I know in what way he employs his leisure hours, if he has any. If his object be to damage me in character and position, and has nothing to occupy his time about but fault-finding, I pity him. Instead of employing my leisure hours in the way most pleasurable and profitable to me and my children, perhaps "Captain" would more highly approve, and more strongly recommend, me spending them in such places as sharedealing is most vigorously carried on, and where the cup is drunk that does inebriate. Since this is not in keeping with my tastes or my ideas of duty, "Captain" will excuse me if I ask him to attend to his duties more promptly, and less time will he have to find fault in others.

I subscribe my name to this letter, and hope, if your correspondent writes again, he will favour the public with his.—*East Pool Mine, Sept.* 25. JOHN MAYNARD.

CENTRAL VAN MINE—SPECIAL REPORT.

SIR,—Being a large shareholder in the Central Van Lead Mine, which adjoins the celebrated Van Mine, I have had it inspected and reported upon by a captain of a mine in North Wales, in which I am also interested. I am not at liberty to give his name, but for the satisfaction of other shareholders I copy his report, as follows:—

"*Sept.* 9.—According to your wish I made a full inspection of the Central Van Mine, and I assure you I was never so much astonished to find that you had such a property. In my opinion, I do not hesitate to say for one moment but what it will soon become as valuable a mine as its celebrated neighbour. I went down the shaft and carefully measured it, and find it is sunk 23½ fathoms—a splendid shaft. The engine and tackle on the top work are most convenient. The Llewynllas cross cut into the Penearth Hill has been driven 29 fms. 1 ft.—the cross-cut on the lode—which looks splendid, and it may come to big lead at any moment. The captain has everything in good order, both at surface and underground, and nothing seems to be neglected that is required at a well-managed mine. I should advise you to hold as large an interest in this mine as you possibly can, for the moment they cut lead in any part of the mine the shares will at once go nearly as high as those of the Van. I shall be able to see you in a few days, when I shall explain verbally more fully than I can by letter."

Such a report requires no comment from— J. C.

SOUTH AND WEST FRANCES.

SIR,—Pending the claim to be made on behalf of the West Frances Mine for the laches committed by the executive and the late agent of South Frances, I am induced to ask the question why it is that the steward to Mr. Basset should have permitted, by what could only have been sheer negligence, the latter mine to have so long encroached upon their neighbour's property without exercising his power to interfere? The two mines being under separate government, although held under one lessor, it was utterly impossible for West Frances to have been aware of the encroachment being made in their sett, and I consider it was the duty of the lord's agent, he being doubtless cognisant of the trespass (if not he ought to have been), to have taken active measures for putting a stop to the depredations of the adjoining mine. Coming so close upon the settlement of the dispute between South Frances and West Basset, it is pretty apparent that mines under the control of Mr. Basset's agent can trespass with impunity. If it is not the duty of mineral agents to keep up working plans for their own use and information the sooner the system is adopted the better it will be for the mining community at large. One thing now is certain, that the laches of South Frances speak volumes in favour of the determination of the late Chairman of the West Basset Mine to prosecute his claim against them, and, perhaps, his enemies will now admit that his perfect honesty all through the suit redounds to his honour and credit. To make amend for his carelessness, the least Mr. Basset's representative can now do is to use his influence, and as mediator to render all the assistance he can to settle what may otherwise turn out to be a 12 years' lawsuit.—*London, Sept.* 24. SHAREHOLDER.

ABERDAUNANT LEAD MINING COMPANY.

SIR,—Could the directors or any of the shareholders of this company inform me when the 100 tons of ore said (nearly two years ago) to be broken ready for market will be sold? It seems to me remarkably strange that these shares are being quoted at so high a price, seeing that the shareholders, some of whom purchase at high premiums, have never yet realised the promised results; nor, so far as I can learn, has there ever been anything approaching that quantity of ore broken in the mine. From enquiries made in the district I have been informed that this property was sold by a poor mining captain to one of the late directors for a very small sum, and was shortly afterwards formed into a company with a nominal capital of 75,000*l.* (15,000*l.* of which I am informed was the price of the mine to the company), and the shares ran up to a premium of 2*l.* each. Subsequently the work at the mine came to a stand for want of capital, and it was agreed to raise 5000*l.* additional working capital. From the balance sheet now before me—published on June 24, 1872—it would appear that 5240*l.* has been raised by the issue of new shares at 1*l.* each, but on the credit side there is a startling item for an allowance of 1277*l.* for commission on the sale of 5240*l.* worth of shares. This to me seems most outrageous, for about one quarter of the working capital to be paid as commission. I should be glad to learn through your valuable Journal to what broker or firm of brokers this most extravagant commission has been paid. I find now that the 1*l.* shares in this company are again being offered by certain parties at 3*l.* 10s. per share; but when I tried to sell on the London market I found that I could not obtain half that amount. I can only conclude that many of the shareholders have lost all interest, and become so annoyed with the whole affair, that they take little or no notice in it, or that they (like myself until lately) are ignorant of the true position of affairs. I think it quite time that an investigation by the shareholders should be instituted. A COUNTRY SHAREHOLDER.

GREAT NORTH LAXEY MINE.

SIR,—Will you oblige me by inserting a few lines to "A Shareholder," who wrote in the Supplement to last week's Journal, on the irregular reports of the Great North Laxey Mine? I do think it is high time to enquire whether the capital is being fairly expended or not. It is more than two years since Captain Rowe said they could then raise 30 tons of ore per month, and there has not been more than 10 tons per month sold since. There appears to be some reform wanted at Great Laxey, and I think there requires some enquiry and reform at Great North Laxey. I should be glad if "A Shareholder" would call upon the Chairman to cause an honest statement to be published in the *Mining Journal*, so that the shareholders may be aware whether there will be required further capital or not, and what the prospects really are.—*Leeds, Sept.* 24. A LEEDS SHAREHOLDER.

WHEAL JANE TIN MINE.

SIR,—Considering the prosperous career and the present excellent position and prospects of the above mine, it is difficult to understand why no reports from the agent have appeared in the *Mining Journal* for many months. The shareholders who reside within easy travelling distance of the mine may find it easy to dispense with such reports, but I think that a proper consideration for those who live at greater distances ought to induce the agent to send the usual periodical reports for publication in the Journal for their information. I hope that this hint will catch his eye, and that we may have the satisfaction of seeing his report in future issues of your valuable and instructive paper. TIN.

Sept. 23.

WHEAL VINCENT TIN MINING COMPANY.

SIR,—The shareholders in this company deserve the fullest congratulations on the spirited and miner-like manner with which they are carrying on this young mine, and on the deserved success they have attained, and as being the pioneer company of this new mining district, which seems to have been overlooked, although well known as possessing the richest alluvial soil for tin in Cornwall. At present they are raising good tinstuff from two lodes, and will sell about 10 tons of black tin (the produce of two months' stamping with 16 heads of stamps) in about three weeks, and are going to put up the second 16 heads of stamps as soon as possible, for which they can raise ample tinstuff, and calculate, when they are erected, on returning 10 tons of tin per month, at a cost of not at all over 400*l.* per month.

Alternun, Sept. 23. W. R.

EAST LLANGYNOG MINE.

SIR,—I observe that the quarrel between Messrs. Taylor and Endean, share-brokers, has of late assumed a peculiar phase in your valuable Journal—very discreditable to both parties, and to us, who were induced through their Circulars and others with whom they acted in common to embark our money in the adventures they so strongly eulogised, very suspicious indeed, for fear the old proverb may not be realised in this case.

Your readers will, no doubt, remember the correspondence in May last between these two gentlemen respecting their advent on East Llangynog, one of whom stated that 50,000*l.* worth of shares had been handed over by the original vender for 12,000*l.*, to be paid for when sold to the public by the aid of Circulars, Investors' Guides, &c. Well may the present managing director say he still holds the largest interest; but his explanations were not very clear or pointed on that score, and we who paid hard cash at a premium are rather credulous about such revelations. Mr. T. is in receipt of from 350*l.* to 500*l.* per annum, with expenses, for his services; and his office has recently been removed to London, no doubt to suit his convenience, as the shareholders were never consulted as to theirs. As respects Mr. Endean, he plainly states that he wrested from his foes his share of the adventure, something like 16,000*l.*, while at the meeting we were told that he then only held 500 shares or so in the valuable property.

What the shareholders require to know in their quarrels is, are the statements held forth at the meeting likely to be realised soon, as it was stated that piles of ore were at surface, and that only machinery was required to dress the great mass of ore visible in the mine; and in the monthly reports solid ore is still mentioned. Nearly six months have now elapsed, and in the last report we were told that only a few buddles were erected. If this is all during the fine summer months, now that short days are at hand little can be done. It will be said, and with some truth, that merchants are slow, and no dependence to be placed when the work will be done; and also that for a young mine a saving of 200*l.* per month is something extraordinary; but as the mine has been going for two years at least, it will not take a very learned man to know that an age must go by before even a very low percentage on capital can be paid.

If these gentlemen would issue another Circular each, and give us a real statement of our property, and what has been done and is doing, it will probably save some trouble to us, and occupy their time better than it is at present. If not, I would advise my brother shareholders to have the property at once inspected by two thoroughly independent competent men, and let us know how we stand, and, if needs be, to appoint a committee amongst themselves, independent of these quarrelling sharebrokers, to endeavour to have the management placed in other hands, which I am sure would be beneficial; and I will gladly subscribe towards it, and shall be glad if any other shareholders will let me know their views.

A LOVER OF PEACE.

NEGLECTED INVESTMENTS.

SIR,—I was greatly pleased upon reading that excellent article of Messrs. Harland and Co., in the Supplement to the *Mining Journal* of Sept. 21, under this heading. So true it is, there are many progressive mines, as well as some of established reputation, like those particularly alluded to by them. Why is it so? Simply because they are not of that speculative character as requires being puffed up by sharebrokers to bring them into general notice. So the shares of such mines being well held, in anticipation of becoming valuable properties, therefore there are no shares floating to suit the broker's business, and such mines remain unnoticed by the investing public. Under the class of progressive mines I could name several, especially in the Welsh district. Such is the Central Van, adjoining the celebrated Van Mine, and on the same run of lodes as the Van Consols and the East Van, each of which have attained a celebrity. The Central Van will one of these days rise up equally prominent, and become a mine only second to its celebrated neighbour, Van. In the more northern part of Wales there are several valuable mines making large returns, scarcely known to the investing public. In the Isle of Man what a number of mines there are in work and paying well not even mentioned in the lists of the Journal, such as the four lead mines working on Great Foxdale lode—the Beckwith, Gross's, Dixon, and the Farraghan. Besides the mines in the lists of the Journal there is the Old Foxdale, in 25*l.* shares, having returned 70*l.* 15s. per share; the East Foxdale, in 1*l.* shares, are at 4*l.* 10s. premium; and the Great East Foxdale, in 1*l.* shares, though only at work 12 months, are at 30s. premium. There are also many such neglected mines eligible to invest in both in Ireland and Scotland. An extended list of such is very desirable, and could be supplied by some one better acquainted with those districts than I am. BETA.

SOUTH GREAT WORK, AND "LOVER OF LEGITIMATE MINING."

SIR,—In the Supplement to the Journal of last week I find "Lover of Legitimate Mining" is anxious to be informed how many tons of black tin are stowed away in the "tin hutch," also when the smelters are likely to have some 10 or more tons brought in from this valuable mine. If "Lover of Legitimate Mining" is a shareholder in South Great Work, and will take the trouble to write to the manager—Capt. O. S. Reed, Praze, Camborne, Cornwall—I have not the least fear he will receive all the "legitimate" information he may desire.

GRANVILLE SHARP, Secretary.
2, *Gresham-buildings, Basinghall-street, London, E.C., Sept.* 26.

SOUTH GREAT WORK MINE.

SIR,—It would be well for a "Lover of Legitimate Mining" to apply to the proper quarter for information regarding this mine, or to take the trouble of reading the agent's report presented at the last meeting, which he has received, provided he is a shareholder. He would then learn that the tin could not be dressed for the market until the water-wheel and stamps were completed. The several points of operation maintain their value, and, no doubt, within a couple of months they will sell about 5 tons of tin. Patience will show to all that the reports of the manager are founded on facts. A BONA FIDE SHAREHOLDER.

ANGLO-BRAZILIAN AND SAO VICENTE GOLD MINING COMPANIES.

SIR,—As no notice has been taken by "Indignant Shareholder" of the replies to his letter upon the Anglo-Brazilian mines and their management, I would be obliged if you would find space for the following observations. The letter of "Indignant Shareholder" was spoken of as "extremely absurd," &c.; but notwithstanding this uncomplimentary opinion, I am bound to confess that I fully endorse all that "Indignant Shareholder" has put forward; for, notwithstanding all the strained efforts to prove the "absurdity upon looking upon Passagem as hopelessly poor," my mind is unchanged. As a shareholder in the concern, I have been a very careful reader of the reports sent home from time to time, and looking at the facts as they now stand, I have reluctantly given up all hope of ever recovering my money. If of the capital which has been expended upon Passagem during the last 12 months been devoted to the development of Pitangue (as suggested by "Indignant Shareholder") which, even in the present manager's time, has afforded abundant signs of being a valuable property, the shareholders would not now be looking forward to the immediate prospect of having to whistle for their capital. After eight years careful trial, Passagem was deemed by men of long experience in Brazilian mining unworthy the outlay of further capital. Another mine was then purchased, and operations commenced with every probability of success; but at this stage the executive in Moorgate-street sent out the man who managed in succession the Anglo-Italian and the Anglo-Argentine Mines, and who, I am told, has been all his life connected with rock formations only, and had never seen jacotinga, which is the character of Pitangue. Hence we have the obvious result. Upon arrival out he immediately commenced to write up the old property—Passagem; and as a consoler to shareholders dissatisfied with his not giving an undivided attention to Pitangue, he finds for them a mare's nest at Passagem in the form of an "enormous jacotinga formation almost in the centre of the works," and with which alone he would retrieve the company's lost fortune." Is it not singular that such a "magnificent discovery," and so recently made, is now so little referred to? The rock lodes, too, were to turn out trumps, and calcination was to show what good results could be obtained from them. This also is being lost in the "dim distance;" but to assuage our hopelessness, some new sensation is introduced, or more correctly speaking, something very old, because the deep stamping, of which we now have so much, was fully tested by the previous manager, who, I have been informed, was for many years reduction officer at St. John del Rey. Various other experiments were tried, but without success. To make a mine pay cost will not suffice for a company—it must pay dividends. By deep stamping we are now told the standard has been much improved, and from the third-class ore too. Had your correspondent said "picked ore," I suspect he would have been nearer the mark. A good deal is said also about the assays, but those who remember the Welsh gold mining mania some years since will know what reliance can be placed on gold miners upon the result of assays. The fact is, as long as people can be found on this side to accept every statement sent home, we shall be treated to dissolving views until we founder, and then have to raise further capital to wind-up the concern without knowing the value of our new property.

The Sao Vicente Company is in pretty much the same predicament as the Anglo-Brazilian—both started with rock mines, both purchased jacotinga properties, and both have had changes made in their management at an unfortunate time for the shareholders. Both the new managers knew nothing of jacotinga, and, as a matter of course, both stuck to this rock formation, leaving thereby the substance to run after the shadow. Many new managers, too, proceed like novices prospecting in a new country, instead of like experienced miners examining the old one.

A SHAREHOLDER.

EBERHARDT AND AURORA MINING COMPANY.

SIR,—If it be true that our company is now in a much worse plight, financially and otherwise, than heretofore, that in addition to the destruction of our mill, which cost us 60,000*l.*, the wire-ropes of our tramway have been maliciously cut, that the arrangements with the South Aurora Company for the use of its Stanford Mill, are as far from being completed as when the information of the destruction of our mill was first received—if all these grave things be true, why are we not kept informed? Why do our directors, contrary to their avowed pledge, keep us in the dark? Since the last meeting, at which our Chairman, ingeniously enough, stated "That he had made arrangements (and would see them carried out) for the shareholders to be kept fully informed of the costs and produce of each month," our shares, from causes of which the shareholders are utterly oblivious, have advanced from 8*l.* or 9*l.* to 16*l.* or 17*l.* per share, and declined again to less than 6*l.* These great fluctuations in market price, amounting to not much less than 250,000*l.*, do not occur without large operations taking place; it is equally true that these operations are not undertaken except by those who possess information, and still more true is it that at least the shareholders do not (or have not) possessed it. Why are we not informed, as are the shareholders of every respectably conducted foreign mine, of the financial results of each month? Apart from the fact that we had the distinct pledge from our Chairman that such should be done, the withholding of important information like this cannot be excused on the score of economy, for experience has shown that your columns are ever open to the publication of news of any interest whatever to shareholders in mines. Why is this extraordinary policy allowed to be continued?

Our present Chairman retained office upon the special condition that "if subsequent events should prove the existing management to be unsatisfactory he would at once resign his position into other hands." Have not the series of positively dire calamities that have since occurred yet convinced even our Chairman that his confidence has been most lamentably misplaced; and that, however, well intentioned, his "entire policy" (of which we heard so much at the last meeting) has proved a most miserable and costly failure? With our mines in a comparatively impoverished condition, for it must be recollected that although we, as shareholders, have not received anything in return for the enormous amount of capital we have contributed, it has not been because the mines have failed to produce mineral, as an enormous amount of valuable mineral has been extracted, and to that extent the mines have been exhausted; with empty coffers, with mill destroyed, and with our shares at something like 50 per cent. discount in the market, our Chairman surely must see that his "policy" has signally failed; and, therefore, consistently with the acknowledged conditions upon which he was elected to the office, in justice to himself and in fairness to his constituents, he should forthwith retire, otherwise the company must quickly be recorded among "the things of the past." A.

Sept. 25.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—It is a fact, no less astounding than true, that shareholders in mines now-a-day too generally manifest a disposition to sit quietly and allow those at the helm of affairs to conduct them just as they please. This is particularly applicable to those interested in the above company, and I must confess my surprise is great to find that I only of all who have an interest in the success of this undertaking should be found to come forward in the Journal of Sept. 14, and in reply to our secretary's statement, contained in the Supplement of the Journal of the previous week, complain of the exceptionably large expenditure as compared with the income, and to arouse the torpidity of my brother shareholders, by requesting them, one and all, to attend the forthcoming meeting, and institute a most searching investigation into the causes which have conduced to bring about such an unsatisfactory issue.

But in this fact, sir, no doubt exists the secret of so many otherwise prosperous undertakings existing at the present moment only in the memories of the unfortunate shareholders; and I cannot too strongly condemn the universal and almost criminal apathy which characterises the shareholding public generally of the present day. They go into mines, and having bought their shares, that is all they do, except to wait and hope, as is the case in too many instances, to receive ere long a cheque as representing a dividend on their shares. I ask, in the name of common sense, would they thus act with reference to any other undertaking? I trow not. Then, if not, why thus act in mining matters? Why subject it, and it only, to such a mad course of conduct?

But here, Sir, I must tell you I am no sharedealer, but one of the *bona fide* shareholders from among the public who go into mines as an investment, and not to gamble in shares, but to wait (with this distinguishing feature, however) to watch also all matters associated with the management of the properties, and to do all in my power to bring the concerns in which I may be interested to a successful issue by exposing, if necessary, the misconduct of those who are immediately associated with the management.

In the Journal of Sept. 21, page 896, our secretary says, "I take this opportunity of stating, for the information of shareholders, that although the detailed accounts for the last three months' working have not arrived, sufficient information has been received to allow of a dividend being declared at an early date." Now, I should have supposed that ere this a letter containing results of three months' working, from May 21 to Aug. 21, ought to have come to hand, seeing that it is now a month or more since Aug. 21, the day on which the accounts were to be made up. I hope, however, that these tactics on the part of our directorate to declare a dividend in a hurry prior to the meeting will not at all influence the action of my brother shareholders on that occasion; they must not allow their vision of things to be impaired by a little gold dust being thrown into their optics, but remembering what I said in your issue of the 14th inst., that hitherto "two-thirds of the gross product has been swallowed up in expenses," that had those results been reversed—that is to say, if one-third only (which I maintain is quite a sufficiently large proportion) had been swallowed up in expenses, leaving two thirds to be shared as dividends—we should each in our proportion receive double the amount we shall under existing circumstances.

In conclusion, I may say I am pleased to find in the Supplement to last week's Journal that at least one of my brother shareholders is alive to the importance of instituting an immediate and thorough investigation into the cause of our expenses being so large in proportion to our returns, and only hope that he may succeed also in bringing about a more satisfactory state of things in connection with the Utah Mining Company, and that we shall ere long succeed in disposing of the services of any and all those who demand such an exorbitant sum yearly for their services, when equally efficient men in great numbers can at any time be found to perform those duties for one-third the sum.

The fact is the educated and enlightened public of the present day will not long submit to such management. One thing is very certain, we possess a mine too rich to be thrown away or trifled with, and if I can only get my brother shareholders to act in concert with me we will soon bring about a thorough reform to the entire satisfaction of all. If "One Interested in both Mines" (who says in concluding his letter, "Will you kindly allow this to appear in this week's Journal, as I have no other means of communicating with my fellow-shareholders") will address, W. K. S. M., Post Office, Bideford, North Devon, it will reach me, and I shall be most happy to place myself in immediate communication with him.

Sept. 23. W. K. S. M.

THE UTAH, AND RICHMOND MINES.

SIR,—I am obliged to you for inserting my letter respecting the Richmond Consolidated and Utah Mines, in the Supplement to last week's Journal. Will you kindly allow me a small space in your next issue for a few remarks respecting the Utah Mines? Surely, my fellow-shareholders must perceive from Mr. Murphy's reports how unsatisfactory a manager he is. It is always with him that except for something or other there would be a great success. His last report runs thus:—"The product would have been much larger had it not been for delay to running, for want of iron flux." A manager of a mine is supposed to overrule such circumstances as these. Why was there not plenty of iron flux at hand? If it is replied that he did not anticipate the want of it, then this only shows that his ability is not equal to the estimate he places upon himself, and which costs the company 3000*l.* per annum. The sooner Mr. Murphy retires the better for the shareholders, depend upon it, for I am one who predicts that he will never make anything of the Utah Mines, while many individuals could be procured to manage them as well as he is doing at one-sixth of his cost, which would be a saving to the mine of 2500*l.* a-year—of itself a great consideration. ONE INTERESTED.

THE UTAH MINING COMPANY.

SIR,—From the starting of the Utah Mining Company unto this day I have read every word the *Mining Journal* has published about it. I am sure I write facts when I state that at the time the management of that mine was in ignorant, unskilled hands the shares went up to 22*l.* or upwards, and now that the manager is a cure-taking, skilful, truthful man the shares are down to 3*l.* Mr. Sewell (since the floating of the company) wrote that the mines belonging to it had ore enough to keep four furnaces running. Mr. Murphy, in his letter of Aug. 23, tells us that one furnace, successfully running, yields a profit in eight days of $1461—being $75,000 for 300 days. If four furnaces were running, and producing at the same rate—and I have neither heard or read of anything to doubt their supply—there would be a yearly profit of 150 per cent. on the present price of the shares. R. N. D.

Belfast, Sept. 24.

THE UTAH MINES.

SIR,—I am interested in the Utah Mines, and must confess that I cannot understand the reports, as Mr. Murphy never gives the number of tons he smelts. I should, therefore, feel very much obliged if someone interested would inform me when it speaks of a balance over cost does it include the two metals, silver and lead, or only silver; of course, I mean the value of the silver. It was reported that there were thousands of tons of silver lead, carrying $20 worth of silver to the ton, and take Mr. Murphy's statement—24 tons daily for eight days, equal to 192 tons, at $20 of silver to the ton, equal to $3840; but the profit apparently is only $1461, so that it takes nearly two-thirds of the profits to obtain the ore, but I suppose the lead is worth something. However, I fancy I must be at sea, and if anyone can give me any comfort I shall be thankful. A SMALL SHAREHOLDER.

P.S.—There is a letter from "One Interested in the Richmond Consolidated and Utah Mines" in last week's Journal about Utah. One thing appears certain—there is something wrong, for, if the last report from Mr. Murphy is to be the criterion for the future, I fear I know enough to feel sure the Utah Mines will never pay.

THE PESTARENA GOLD MINING COMPANY.

SIR,—I have lately seen in the Journal some very favourable reports of the Val Toppa portion of the property of the Pestarena United Gold Mining Company. The Val Toppa Mine was one of those absorbed by our new company some five or six years ago; and if I remember right, nearly 60,000*l.* had been expended for and in development of it, so that it must have been even then in a complete state for working. If, then, it is now so rich why do not they send more gold home, for present returns can hardly do more than pay expenses? Machinery surely cannot be required, and they have had plenty of time to open up the mine, nearly ten years. When one thinks that over 200,000*l.* has been expended for and on these mines, the wonder is where it has gone.—*Sept.* 26. A SHAREHOLDER.

[For remainder of Original Correspondence see to-day's Journal.]

GOLD MINING SUPERSEDED.—The great secret has been discovered at last—the secret of the transmutation of metals, over which the mysterious alchemist has for centuries been wasting his life and his treasure. California appropriately claims the philosopher who has found out how gold may be made by the ton. The storey is this—some time ago, "a plain looking man" walked into a San Francisco bank, and produced an ingot of metal, which was assayed and pronounced to be pure gold. He came again with other bars, one of which was sent into the Mint, and there transformed into $8000 worth of double eagles. The stranger was pressed to say where he had found all this wealth, but for a time he kept his questioners at bay. At length, however, he declared that he had made it himself, and was prepared to produce any quantity of the purest gold. Of course, he declined to disclose his priceless secret; but he appears to have entered into an arrangement with a local banker, who is to undertake the cautious and profitable distribution of the products of his alembic. Already, we are told, more than half a million of coin made of the manufactured gold has been put in circulation, and plenty more of the same sort was to follow. This is a wonderful story; but if this man is really bringing ingots of gold into the market in the fashion described, we venture to think that the case is one rather for the intervention of a detective than for scientific investigation.

EXTRACTION OF PRECIOUS METALS FROM COPPER PYRITES.—A highly interesting paper was presented to the Paris Academy of Sciences, on Sept. 2, entitled "Nouveau Procédé pour l'Extraction des Métaux Précieux," by Mr. F. CLAUDET, whose reputation as a practical chemist is well known in this country. In it he points out the advantages to be derived from the substitution of pyrites for Sicilian sulphur as a source of sulphuric acid, and that since many purchase the pyrites for its sulphur alone, and re-sell the residue for others to extract the copper and other metals, has afforded Mr. J. A. Phillips and himself, both formerly pupils of the Ecole des Mines, the opportunity of establishing a lucrative business at Widnes, near Liverpool, where these burnt ores are readily obtainable in large quantities. From the analyses given the quantity of precious metals contained appears to be almost infinitesimal, yet they last year treated 16,000 tons, and extracted therefrom 333·242 kilos of silver, and 3·172 kilos of gold. The expense of separating the precious metals was 10,400 frs., and satisfactory profits have, therefore, been left.

CLARE'S ELECTRO-MAGNETIC ENGINE.—The working model of Mr. John Earl Clare's electro magnetic engine was on private view on Saturday. Its power and reversing motion are said to be perfectly sound, and in accordance with natural law; hence, as the square of the magnet is increased, the power, it is contended, also increases in the same ratio, and its application can be appropriated *ad libitum*. The importance of this principle, if found to be practicable, cannot be too highly valued in a national and commercial point of view, for the coals, boilers, engine, &c., on board steamships are not only a sacrifice of capacity, but are expensive agents to carry and keep up to working order, irrespective of risk of explosion, and the reduction of the power of the boiler by age. The space that this engine would require as contrasted with that needed for steam-power would be infinitesimal, from the fact that coal, cylinders, air pumps, steam chests, super-heaters, condensers, &c., would not be reqired in electro-magnetism, and the ordinary boiler space would of itself be far greater than would be requisite for the batteries of the electro-magnetic engine. By the adaption of this principle there would not be the present delay in starting a steam-vessel, since the action of electro-magnetism is instantaneous.

MANUFACTURE OF IRON AND STEEL.—Mr. WILLIAM DINGLEY has patented an improvement or improvements in the manufacture of iron and steel, which consists in treating iron or steel in the process of puddling, for the purpose of effectually and rapidly removing any phosphorus or sulphur contained in the iron or steel. To effect this, crude sulphate of soda, commonly called salt cake, is introduced into the puddling-furnace and upon the surface of the melted iron or steel after the latter has been puddled for a short time; and after the addition of the salt cake, the puddling process is completed in the usual way. It is preferred to use 12 ozs. of salt cake to each heat of 4 or 4½ cwts. of iron or steel, but the inventor does not limit himself to this quantity.

Royal School of Mines, Jermyn Street.

[FROM NOTES BY OUR OWN REPORTER.]

LECTURE LII.—Fire-damp (called in Germany *wetter-dampf*, or in another condition, *schlagender*, and in France and Belgium, *grisou*), being very light (said Mr. SMYTH), is generally to be found in the higher parts of the mine. Thus, if a seam of coal were worked by a number of ascending levels, the fire-damp would accumulate at the top of each level, and render the working dangerous. This will show you the necessity of introducing into the workings a regular system (so to speak) drainage of the gases. There are many instances on record of accidents which might have been prevented by proper precautions. The question is, therefore, to find out to what extent it is necessary to drain a mine of fire-damp in order to render it comparatively safe. In many cases one seam may by means of an adit level be made to relieve a lower seam, and thus expel large quantities of "blowers" from the mine. Where a thorough discipline can be established the gases may break out in vast quantities, and yet do no harm. An instance of this occurred some time ago at the Oaks Colliery, near Barnsley, which is of an instructive character. It shows the importance of working a fiery mine with safety-lamps alone, and of taking the return air into the upcast shaft without passing it through the fire of the ventilating furnace. Between four and five o'clock in the afternoon, whilst the colliers were at work in some banks down the engine plane, a sudden outburst of gas took place from the floor of what is called the Barnsley seam. The gas issued from various places along a distance of 50 yards, but at one point the escape was so violent as to be compared by those who heard it to the blast rushing into a blast-furnace, and by others to the violent escape of high-pressure steam from a boiler. The whole of the Stephenson safety-lamps in use in that district for a space of 500 yards were extinguished almost instantaneously. The Davy lamps were filled with fire, and became red-hot, and several of the persons using them were burnt on the hands by the gauze. Very fortunately the men at this colliery had become accustomed to use the lamps properly, and the lights were carefully extinguished by drawing down the wicks. In less than an hour from the first appearance of the gas it had nearly passed away, the only traces being at one or two places on the floor, which were much heaved up. A large quantity of air was passing this district, and at the point where it met the gas was perfectly fire-h, that being the first working place, and only 100 yards from the engine plane, which was the main intake; but no amount of ventilation could have diluted the gas below the firing point in the vicinity of the place where it issued. It is undoubted that if there had been a naked light in this district of the pit, if any of the safety-lamps had been out of order, or dirty with oil or coal dust, if one of the Davy lamps when they become so hot had been dropped upon the ground, or if the return air had passed over the furnace a distance of 800 yards from where the gas came off, that in any of these cases a fearful explosion must have resulted, the cause of which, like many others, probably being never known. As there is a possibility of a similar event occurring at other collieries, this is a matter worthy of your most careful consideration.

In metalliferous mines fire-damp seldom occurs, but remarkable instances of its presence do transpire from time to time when the ground approaches the character of the coal measures, and in the black shale and other beds connected with carboniferous limestone. Cases have occurred in the Hartz, at Talargoch, and more recently in Flintshire, Montgomeryshire, and Okel Tor (Cornwall), where certain parts of the works had to be abandoned for some time on account of a violent incursion of fire-damp. When we regard the considerable decomposition which is continually going on in mines, the presence of fire-damp and other deleterious gases cannot be wondered at. The temperature of a mine increases as we descend, and after a certain depth is no longer affected by the changes at the surface of summer and winter. The increase of heat is variable, and changes in different classes of rocks. Fire-damp, however, is much affected by atmospheric pressure, and at some parts of the year it is more prevalent and abundant than at others. George Stephenson made some very interesting experiments with respect to "blowers" and deleterious gases. He noticed that the emission or non-emission of gas from the coal in a mine can often be indicated by the use of a barometer. Thus, when the barometer is low we may be tolerably certain that fire-damp is exuding in large bodies, but when it is high there will be a much less quantity. This is found to be the case particularly when the effects are observed on some continuous blowers, natural jets of gas being kept back entirely in certain states of the atmosphere. The barometer is, therefore, a most useful instrument to keep both in the mine and at the surface, and its rise and fall should be carefully and systematically watched and noted. When the barometer is lower than usual, extra precautions must be taken. I once visited a certain mine in the South of France, and when there I found the mine full of noxious gases. The barometer was very low, and a strong gale from the south-west was blowing. It was a very stormy day, and the gas in the mine was so bad that the men were all obliged to leave their work. Warmth of temperature must be taken into consideration in ventilation, and we find that a cross-cut through pyrites will be quite hot. An instance of this is to be found at the Monte Cutini Mine, in Tuscany, where the natural heat is from 80° to 86°. It requires strong men to work in high temperatures. In most mines, however, varying in depth from 250 to 320 fms., the temperature is below 80°, and they are very seldom higher than 86°. We must not, however, be led away with exceptional cases of this kind.

In dealing with sudden eruptions of blowers, nothing is more valuable than presence of mind to the workmen, and a sound knowledge as to what is best to be done. I was once near a mine at the time a blower in the workings took fire. The men night, if they had had presence of mind, put it out instantly, but they were afraid of an explosion, and ran away. Of course, if there had been an explosion their flight would probably not have saved them; but the result was that the coal took fire, and could not, when assistance came, be extinguished. Fortunately good provision had been made for accidents of this kind, and it was determined at once to isolate that part of the colliery. Dam-doors were ready at hand, and all the air passages were at once closed, and the supply cut off. Combustion was thus arrested, and after a proper delay the works were re-opened, and the fire being out the getting of coal was resumed. In another case, when a fire might have been put out at once with a little presence of mind, it spread so much by the time any attempts were made to reach the spot that nothing could be done, and for two years and upwards the whole district had to be abandoned, involving as it was feared the loss of the whole mine, as well as the intermediate loss by the workmen of their earnings, and by the masters of their profits and interest on the capital invested.

Having said so much of the deleterious gases which abound in so large a proportion of our mines, and particularly in collieries, it is time to turn to the means by which the difficulties they create are combatted, and sufficient quantities of good air supplied to the miners. If we approach a pair of shafts belonging to a deep mine, and especially in the winter time, we shall see a column of warm air or vapour and smoke rising from the upcast shaft. A considerable portion of this is due to natural ventilation, and I am acquainted with a worthy farmer in the dales of Yorkshire who can tell when to cut his hay in security by observing the character of the vapour emitted from a neighbouring shaft. In the great majority of metallic mines the air is found to renew itself, and to form a natural ventilation. As the difference of temperature between the air at the surface and the air below is the cause of natural or spontaneous ventilation, it is obvious that if the shafts of the mine are sunk and connected with each other by a level underground the column of air contained in both shafts will balance each other. If one shaft is made longer than the other, the column of air it contains forces itself by its own weight along the level and up the other shaft, thus producing a current of air. This process in a large number of cases goes on without the help of any artificial means, and there are a great many mines through which very large quantities are forced in this way. This plan is chiefly employed in the hilly districts of Devon and Cornwall, besides many of the midland districts of England, where the workings are not subject to fiery gases, and where the deterioration of the air arises principally from the vitiating effects of the breath of men and horses, of the combustion of candles, of gunpowder smoke, and from various impurities of that kind. At certain times, and often when the wind is in a particular direction, especially if the shafts are not very different in depth, there will be an equilibrium, and the air will stagnate. Artificial means must then be resorted to, and one of the shafts lengthened by a stack or tower of masonry about 50 or 60 ft. high, which will make a decided difference between the two columns of air. In ancient times it was usual to build a stack over the pit, and to attach to it a furnace accessible at the surface through doors, and in some pits this mode, or that of suspending a fire-grate in the shaft, may perform good service. If, however, a really large volume of air is required, we must heat the full height of the column in the upcast shaft, and by a good brick lining and prevention of the dropping of water obtain a maximum effect, and the greatest possible difference of temperature between the upcast and downcast shafts.

Another method of rendering spontaneous ventilation effective—a very old remedy, and used to this day—is application of horse-heads or cowls at the top of the shaft. When in trial work there is but one shaft, divided down the middle by a brattice cloth, horse-heads or tub vanes are put up, and the mouth of one kept facing the wind, and the other in the contrary direction, the air being thus carried down by the one and up by the other. A third cowl is often employed for the purpose of getting rid of the foul air brought to the surface by the upcast, and if any wind be stirring at all this is a very easy method of effecting that purpose. Pipes are now much used in small mines and exploratory workings for ventilation with considerable success. They have been usually made of wood, carefully fitted, and the joints clayed so as to render them air-tight. These wooden pipes have, however, had to give way lately to cylindrical air-pipes, made of zinc, which, although thin, are very great advantageous, as being light they can easily be put up; but they are also easily damaged. Strong cast-iron tubes are now being generally used, their weight being the only drawback. Many other materials have been tried—as, for instance, *papier maché*, but it is found liable to be quickly destroyed by dampness. These pipes should be as large as possible, and the larger they are the better, as they then do their work more effectually. In coal mines pipes are dispensed with as soon as possible in order to employ the levels themselves for ventilation, so that instead of a 12 or 6 in. in diameter, the air passage is 6 ft. by 5 ft., through which large volumes of air are passed. Another plan is that of sinking a pit of small dimensions by the side of the main shaft for the sole purpose of ventilation. This is called "trumpeting," but this and other similar contrivances are only suitable for diminutive workings and small quantities of air.

Spontaneous ventilation, however, is not always confined to metalliferous mines or to small workings. There has been found in a certain class of collieries natural draughts of air, which greatly aid the artificial means of ventilation employed. The late Mr. Nicholas Wood, in some interesting papers of his, gives a remarkable instance which occurred in the North of England. He states that a deep pit, of no less than 360 fms., was sunk to the coal of the Hutton seam in connection with the Wingham Collieries, and drifts 336 ft. in length were run at the bottom, when certain legal difficulties arose, which stopped the progress of the works. The diameter of the pit was 14 ft., divided by a brattice, and on visiting it two years after he was surprised to find a high degree of spontaneous ventilation. He immediately set to work to obtain the exact facts, and he found the temperature at the bank was 44° Fahr., and at the bottom of the downcast 49°, while after going through all the workings, and arriving at the base of the upcast, it was 52½°. The consequence was that this average difference between the two shafts of 3½° of temperature was found to be quite sufficient to create a difference of 7003 cubic feet per minute, and this without any artificial aids whatever. This is a large quantity, no doubt; but in another colliery, called the Tythe Pit, with a shaft of 672 ft., and the temperature at the surface being 43°, and at the bottom of the downcast 45°, the temperature of the return air was found to be 63°. This difference gave rise to a great ventilation indeed, no less than 36,764 cubic feet per minute, due to natural causes alone. If, therefore, artificial power is brought to bear in the same direction as the natural ventilation, they may easily have here a current moving at the rate of 50,000 cubic feet per minute.

THE INSTITUTION OF CIVIL ENGINEERS.

PREMIUMS AWARDED—SESSION 1871-72.

The Council of the Institution of Civil Engineers have awarded the following premiums:—

1.—A Telford Medal, and a Telford Premium, in Books, to BRADFORD LESLIE, M. Inst. C.E., for his "Account of the Bridge over the Gorai River, on the Goalundo Extension of the Eastern Bengal Railway."

2.—A Telford Medal, and a Telford Premium, in Books, to CARL SIEMENS, M. Inst. C.E., for his Paper on "Pneumatic Despatch Tubes: the Circuit System."

3.—A Telford Medal, and a Telford Premium, in Books, to WILLIAM BELL, M. Inst., C.E., for his Paper "On the Stresses of Rigid Arches, Continuous Beams, and Curved Structures."

4.—A Telford Medal, and a Telford Premium, in Books, to JOHN HERBERT LATHAM, M.A., M. Inst. C.E., for his description of "The Soonkésala Canal of the Madras Irrigation and Canal Company."

5.—A Telford Medal, and a Telford Premium, in Books, to GEORGE GORDON, M. Inst. C.E., for his Paper on "The Value of Water, and its Storage and Distribution in Southern India."

6.—A Telford Premium, in Books, to FREDERICK AUGUSTUS ABEL, F.R.S., for his Paper on "Explosive Agents applied to Industrial Purposes."

7. A Telford Premium, in Books, to BASHLEY BRITTEN, for his Paper on "The Construction of Heavy Artillery, with reference to Economy of the Mechanical Forces engaged."

8. The Manby Premium, in Books, to CHARLES ANDREWS, M. Inst. C.E., for his Paper on "The Somerset Dock at Malta."

The Council have likewise awarded the following prizes to students of the Institution:—

1.—A Miller Prize to OSWALD BROWN, Stud. Inst., C.E., for his Paper on "Sewage Utilisation."

2.—A Miller Prize to ARTHUR TURNOUR ATCHISON, B.A., Stud. Inst. C.E., for his Paper on "Railway Bridges of Great Span."

3.—A Miller Prize to JOHN ADDY, Stud. Inst. C.E., for his Paper on "The most suitable Materials for, and the best mode of Formation of, the Surfaces of the Streets of large Towns."

4.—A Miller Prize to ALFRED EDWARD PRESTON, Stud. Inst. C.E., for his Paper on "Wood-Working Machinery."

5.—A Miller Prize to WILLIAM PATTERSON ORCHARD, B.E., Stud. Inst. C.E., for his Paper on "The Education of a Civil Engineer."

Meetings of Public Companies.

THORNHILL REEF GOLD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the London Tavern, Bishopsgate, on Monday,

Mr. HENRY MONEY WAINWRIGHT in the chair.

Mr. THOMAS THOMPSON, jun. (the secretary), read the notice convening the meeting, and the directors' report, as follows:—

Sept. 23.—This extraordinary meeting, as the shareholders are aware, has been convened for the purpose of considering the advisability of issuing the 5000 reserve shares; and upon the advisability, after the perusal of Mr. Salter's and the underground agent's last reports, the directors think there cannot be two opinions. The directors understand that the secretary has forwarded to each shareholder a copy of these reports; but in case any shareholder should not have received them, they will be read again at this meeting, and printed and circulated, with a report of the proceedings that will take place to-day. The test Mr. Salter had made of the quartz in the mine than corroborates everything that has been said in its favour; and it is very essential that he should have ample funds, not only to complete the machinery he has there, but to carry out vigorous operations on the two adjoining reefs. The directors believe that, with the exception of some more stamps, and perhaps some additional dressing tables, there is now sufficient machinery on the mine to carry on the works on a great scale for many years to come. It will be observed that Mr. Salter estimates that the stone he had sent to the mill would if treated at the company's own works have yielded a profit of about 38s. to 40s. per ton; but that the stone they were then driving through in the 300 feet level would give a profit in excess of that amount, and the directors are informed that when in full work Mr. Salter expects the mine will yield a much higher average. In forming the company the directors had limited the capital to the smallest possible extent; but, unfortunately, it has scarcely proved sufficient. They, therefore, now propose to issue the reserve 5000 shares to the shareholders on the following terms:—The shares to be issued as ordinary shares *pro rata* to the shareholders, payable 5s. on application, 10s. on allotment, and the remaining 5s. three months after the date of such allotment; and all shares not applied for within seven days to be disposed of by the directors for the benefit of the company, on such terms as they may deem advisable. The directors have the fullest confidence in the local management and in the success of the company; and they have every reason to believe that every share not taken up by the shareholders as their *pro rata* proportion will be immediately applied for.

The following are the manager's reports, referred to above, and which, having been circulated by Mr. Thompson, were taken as read:—

July 16.—Machinery: The new boiler is now in work, and a saving of fuel is effected. The Harvey stampers are all ready, except the water connections, which are now being fitted between the stamps and the house lift pump, which latter is fixed in its place. As soon as this is finished we shall start the stamps to work, but it can only be on rubbish, as the dressing arrangements are not completed; and, in fact, the remaining portions of the machinery require to be put up. We have a very large supply of water stored in the reservoir, which is full to overflowing.—Mine: I enclose report from the mining manager; by it you will see the improvement in the 300 feet level, going north, which, in my letter of May 28, I said would likely be the case. There is a large piece of ground between this and Fyfe's shaft where gold is known to be; and ¾ oz. per ton, if our own machinery was ready, would leave a very handsome profit—say, 40s. to 45s. per ton. Everything is ready in the mine for an advantageous start when we get through to Fyfe's shaft, and, really, the thing works so well, it is a pity we have been so cramped for funds, for that is the only drawback. I should, therefore, strongly recommend the sale of the 5000 reserve shares, to enable us to be in a position to treat the ore with our own appliances. In order to give you an idea of the value of the stone from the mine, I sent 15 tons to a public mill. It being winter time, and the roads bad from the late rain, this method of ascertaining its quality is costly, but very much more satisfactory than an assay would be. The return from the 15 tons was 9 ozs. 12 dwts. of retorted gold, as per crusher's slip enclosed; an assay of the same stuff would probably give 1 oz. per ton. This is good payable stone—say, 38s. to 40s. per ton profit, if treated by our own appliances. About 10 tons of the above stone came from near the main shaft, and the remaining 5 tons from the north end of the level. The stuff now in the north end, you will see by the manager's report, is valued at ¾ oz. per ton. I would have sent a larger quantity to the mill, but the expense is so great, carting would alone bring 15s. per ton. This would have prevented me sending any at all, only that I knew you were anxious to have something more than a guess at the quality of the stone, and I saw plainly that we should not be ready in time with our own machinery.—WILLIAM SALTER.

GENTLEMEN: Since my last report the 300 feet drive has been extended to the length of 75 ft. The last stone taken down shows a great improvement in both stone and gold. The reef looks like the reef that Buttingham's had in the former workings. I am of opinion that we have got hold of the new making of the gold-bearing lodes, judging from the appearance of the stone. I believe the reef as broken out will give at least 15 dwts. per ton. The ground is easy driving as soon as we are prepared for stoping; the quartz could be broken out and sent to surface for 7s. per ton; this is a like a continuation of the gold in the bottom of Fyfe's shaft, and our level should be continued until we meet that shaft, about 140 ft., when we should be in first rate trim for breaking stone. The 500 feet drive is over 80 ft., in a well-defined reef about 6 ft. wide; but the gold in stone being thin in nature would weigh light, therefore cannot say how it would yield; but from the appearance of the dip north of the reef about 50 ft. more should bring us on the same run of ground that is in the 300 feet level, in which case the company will have a large extent of payable ground opened that can be worked at a small cost: 50 ft. is set to sink in the engine-shaft on the west wall of the lode. If the east wall is not struck on the shaft in sinking, a cross-cut should be put in to strike the east wall of the lode; then I expect payable stone in this portion.—J. THEWREN.

The CHAIRMAN then said that when the directors last had the pleasure of meeting the shareholders he had told them that they should have occasion to meet again at no distant period. The directors were then asked what reports had been received, but the reports up to that date had merely been of a general character, although the directors were immediately expecting more definite. Most satisfactory letters had now been received from the manager, who states that from the quartz they are raising at the mine the profits should amount to from 25s. to 40s. per ton, but that he (the manager) was daily expecting a great improvement. The shareholders would remember that the prospectus promised very large dividends at the rate of only 25s. per ton profit, but, if the quartz continued as rich as at present, the profits would be far in excess of anything they had ever anticipated. Mr. Salter had informed them (the directors) that he was running short of funds, and the directors considered it to be their duty to supply him with the necessary money to complete the machinery now in course of erection at the mine, as well as to drive out to, and commence operations on, the Mosquito Reef, which gave first-rate prospects at surface. The directors had, therefore, determined to recommend the shareholders to empower them to issue the whole of the 5000 reserve shares; and as these shares were, he considered, likely to become of considerable value, he should advise that they should be first offered to the shareholders in the mine *pro rata* with their present holdings, and that any that might afterwards remain unapplied for should remain in the hands of the directors, to dispose of as they might deem expedient.

Mr. HARE then asked if the new issue of shares was required for the machinery or for the mine?—The CHAIRMAN: More money is required to complete the new dressing machinery, and the directors also think it advisable that operations should at once be commenced on the Mosquito Reef. He, however, hoped and expected that at the next half-yearly meeting the directors would be able to inform the shareholders that handsome returns were being made, even if they were not in a position to declare a dividend.

Mr. DARBY asked what amount of quartz could be crushed with the present stampers?—The CHAIRMAN replied that there was at present a battery of two stamps on the mine, and that they were calculated to crush over 100 tons per week, but that as soon as the directors heard from Mr. Salter of the successful working of the stamps, of which, as they had now been working for some considerable time in this country, and found to be most satisfactory, they could have no doubt they should send out three or four more new batteries. He (the Chairman) then formally moved the following resolutions, which were carried unanimously:—1. That the reports of the directors and agents be received and adopted, and printed and circulated among the shareholders.—2. That the directors be and are hereby empowered to issue the 5000 shares now held in reserve, and that the same be offered to the shareholders as ordinary shares, *pro rata*, according to their present holdings, or as near thereto as circumstances will permit, on the following terms as to payment—5s. on application, 10s. on allotment, and the remaining 5s. at three months after the date of such allotment; and such of the said shares as shall not be accepted by the shareholders within seven days of the date of the notice offering the same may be disposed of by the directors for the benefit of the company on such terms and conditions as they may deem expedient.

The usual vote of thanks to the Chairman and directors terminated the proceedings.

THE HELLIN SULPHUR COMPANY.

The statutory meeting of shareholders was held, on Sept. 21, at the offices of the company, Nicholas-lane, City, when the directors presented the following report:—

In presenting you their report at this statutory meeting, the directors have the pleasure to inform you that the purchase of the Hellin Sulphur Mines, of the Coto Menor, and of the extensive buildings and establishments erected on the estate, has been completed. Of the thirteen annual instalments due to the Spanish Government, one has been paid. The managing director was able, during his late visit to Spain, to make this payment in Bonos del Tesoro, at a discount of about 26 per cent. on the sum mentioned in the prospectus. The preliminary expenses of the company have also been paid. On the recommendation of Mr. Sopwith, consulting engineer of the company, the directors have secured the services of Mr. J. K. Rodwell, civil engineer, a gentleman of experience in sulphur mining and fusion of the ore, and have appointed him their resident engineer at the mines, where he now is. Two experienced Sicilian workmen, thoroughly acquainted with the manufacture of sulphur, have also been engaged. On his journey to the mines Mr. Rodwell visited the sulphur manufactories at Marseilles and the sulphur mines at Lorca, where he obtain much useful information. At the beginning of next month he will be in a position to commence active operations at the company's mines, which will thenceforward be pursued with the utmost energy. This year's crop of esparto grass has been sold for about 460*l.*, the purchaser paying all the expenses of gathering and removal. Some rough sulphur has been sold at about 7*l.* 40*s.* per ton, delivered at the Las Minas Railway Station.

BRITTANY MINES COMPANY.

The first ordinary meeting of shareholders was held at the offices of the company, Angel-court, Throgmorton-street, on Wednesday,

Mr. JOSHUA H. HUTCHINSON in the chair.

The CHAIRMAN, after explaining the expenditure in the balance-sheet, read a report of the old Brittany Silver Mining Company, in which there was a favourable reference to the Trémuson Mine.

Mr. G. W. CLARK read the notes he had taken in Brittany (in company with Mr. W. Chambers), upon the mineral importance of the "Concession de Trémuson," which were very favourable. He also remarked that labour was very cheap, and the roads and railways good and convenient.

Mr. CHAMBERS explained the new arrangements entered into with the Messrs. Maout respecting the pumping of water out of Trémuson Mine. He said that the first arrangement made with Mr. C. Le Maout could not be carried out, on account of the inefficiency of the machinery he employed, and the consequent loss of money and time. Under that arrangement the six probationary months wherein to prove the value of the mine had already begun. However, new arrangements had been made, in which Mr. C. Le Maout agreed that the said six months shall not begin to run until the water is pumped out from the bottom of Trémuson Mine. Consequently, the company undertake the completion of the pumping, and bear one-half of any amount by which the works may exceed the remaining portion of the payment to be made to him if he had carried out his contract.

Mr. SAUVEE, a shareholder, said that he had visited the property, and he considered it very valuable. He suggested that the company should work the other mines in the concession while the water was being pumped out of Trémuson.

Mr. CHAMBERS, in reply, said that he would be prepared to lay before the shareholders a scheme for letting different parts of the property on royalty.

Mr. CHAMBERS, in reply to a shareholder, said that the company had the right of acquiring any mineral they might find during the time the water was being pumped out at Trémuson.

The following resolution was proposed by Mr. ALFRED ROBSON, and seconded by Mr. A. SAUVEE:—"Resolved, that the balance-sheet, made up to Aug. 31 last, be accepted and passed; and that the course taken by the board as stated by them to the meeting is approved of."—Carried unanimously.

A vote of thanks to the Chairman terminated the proceedings.

GREAT EAST FOXDALE SILVER LEAD MINING COMPANY.

The first ordinary general meeting of shareholders was held at the George Hotel, Dale-street, Liverpool, on Monday,

Mr. EDWARD FAIRCLOUGH in the chair.

The minutes of the first general meeting of shareholders, held on November 27, 1871, having been read and confirmed,

The directors' report was read, as follows:—

In presenting to the shareholders the balance-sheet showing the financial position of the company from the first starting of the mine to the 30th July last, the directors can, with great satisfaction, point to the very encouraging prospect under which this mine is now fairly started in full working order, with all necessary appliances, engine, pumps, &c., leaving a balance in favour of the mine of 14,973*l.* At the first meeting, held on Nov. 27, 1871, in conformity with the Companies Act, the directors stated that they considered two months would be sufficient time to complete the engine and get the pumps in working order; but owing to the exceedingly wet and unfavourable season, which seriously retarded the completion of the workings at surface, it was not until the end of March that the machinery was completed, to enable the men to commence unwatering the mine. The operations since then were carried on in the most vigorous manner, and about the middle of July last the shaft was cleared of water down to the 40 fathom level, well secured all through with new timber, cased and divided for drawing, and supplied with two sets of 12-inch pumping lifts, all in the best order, and capable of commanding the water at all times of the year. The 15 fm. and the 30 fm. levels are described in Captain Lloyd's report, July last (a copy of which was sent to each shareholder), and further reported on by Captain Grose in August last, a copy of which report is herewith annexed, as opening up very good; lodes containing blende and lead ores of a very rich quality. The 40 fm. level was not cleared of water when Capt. Lloyd inspected the mine, but when Capt. Grose surveyed it, and made out the plans of the workings now be ore you, the mine was clear of water to the 40 fm. level, and he described the lode in it going east as being 2½ feet wide, and composed of a beautiful friable spar, iron pyrites, carbonate of lime, and a course of ore worth 50*l.* per fm. It gives the directors great pleasure to call your attention to this fact, as it proves, unquestionably, the value of the ground, and also that it improves in depth. We have set the men to clear out and extend this level, as strongly recommended by Captain Grose, who says in his report—"The old explorations at the 40 fm. level are on a very limited scale, at which I was much surprised, as the lode at this point presents a more promising character, and is more clearly defined, than in any other part of the mine." We have also set the men to sink the shaft another 20 fms. deeper, with all speed (as advised by Capts. Lloyd and Grose in their reports), in order to drive a new level 20 fms. deeper, to meet with the lode going down in the 40, and which we have every reason to expect will be found to have increased considerably both in size and value when intersected 20 fms. deeper. The directors are sorry to have to inform the shareholders that, like other companies, they have been hampered for want of coal, in consequence of the parties who formerly supplied them taking advantage of the great rise in price, and failing to keep their promises to execute the orders given to them; thereby compelling us to suspend the sinking of the shaft, and also the work in the 40 fm. level, where the lode is so good. The want of coal, of course, obliged them to stop the pumping, and the water rose in the levels; but that difficulty is now overcome, as there is at present a good supply of coal in the mine, and pumping has been resumed, and the men are now able to recommence the sinking of the engine-shaft and the driving in the 40 fm. level. We have commenced sinking at surface in the shallow pits, on the recommendation of Capt. Lloyd in his report, July last, and the directors are happy to say that very cheering results have followed these trials; and in the middle pit, to the east of the shaft, which is now down 25 feet, there has been opened up a most promising lode, from which we are raising a quantity of lead ore. With regard to the work done at surface, the erecting of the engine, boiler-houses, smithy, joiners' shop, offices, &c., you will have seen by Captains Grose and Lloyd's reports that they bear the most gratifying testimony to the able and thorough manner in which they have all been carried out; and considering that the whole of the machinery, buildings, cost of erecting, expense of promoting the company, and putting the mine in thorough working order down to the 40 fm. level, has been effected at an outlay of about 5000*l.*, the directors have great confidence that the shareholders—at least those who have visited the mine—will admit that everything has been carried out with a strict view to economy, and that a reformation in mining has been achieved, in respect of the vast amount of work done for comparatively so small an outlay. The directors beg to state that their confidence in the undertaking is increased tenfold now that they have seen the mine in depth, and they firmly believe the shareholders are in possession of a property of great value, and from which before long they will receive good dividends. The directors beg to suggest the advisability of holding the general meetings every six months instead of annually, the time for holding them to be in February and August, and if the shareholders should think fit the August meetings might be held on the mine. The directors beg to intimate that they have not received any remuneration for their services rendered up to the present time, but consider that a certain amount of remuneration for their services should be fixed upon at this meeting. One of the directors, Mr. Rule, retires from office; being eligible, offers himself for re-election.

Mr own, Isle of Man, August.—I have carefully examined and surveyed this mine, and beg to hand my remarks thereon, together with a plan and section showing the position of the engine-shaft, and the extent of the workings both east and west on the course of the lode. The geological features of the mine are most favourable for the production of minerals. The stratum of rock which developes along the adit level is a highly schistose clay-slate, the strike of the beds being clearly defined, and the main as well as the cross-joints of the heading well filled with rich-looking friable carbonate of lime, giving to the structure a highly metalliferous appearance. In reference to the dialling, I find the former workers cross-cut from the adit at a point north, and intersected the lode, but owing to the drivage being filled with stuff we were unable to examine thoroughly, but from close observation, I find there has been a large quantity of ore ground stoped away, and, judging from the splendid appearance as seen in the pits situate to the east of the shaft at surface, I am convinced that you have got a most valuable part of the lode to work upon, and if the property were my own I would at once commence some explorations, and begin to raise ore from this part of the mine. The 15 is driven about 50 fathoms east and west on the course of the lode, which averages 2½ feet wide, and is composed of carbonate of lime, blende, and lead ore. In the eastern drivage, on the same level, the lode is split into two divisions, each of which is looking most favourable, and promising greater productiveness at an increased depth. The 30 is extended about 70 fathoms east and west on the course of the lode, and the appearances in several parts of the back of the drivage, especially the east end, are of a most promising character, and I am of opinion that there are valuable deposits of ore to be found in this section of ground between the 15 and the 40 fm. levels. I should, therefore, recommend you to make some trials here, the cost of which would be but trifling, as the ground is already laid open. The old explorations in the 40 are on a very limited scale, at which I was much surprised, as the lode at this point presents a more promising character, and is more clearly defined, than in any other part of the mine. In the drivage east from the engine-shaft the lode

is about 2½ ft. wide, and is composed of a beautiful friable spar, iron pyrites, carbonate of lime, and a course of lead ore worth fully 50*l.* per fathom. The fact of this important discovery being made in the bottom workings speaks well for the future prosperity of the undertaking. In looking at the gradual improvement from the 15 down to the 40 I can but come to one conclusion—that depth is absolutely necessary to make your mine a success, and I should push on the work to develope it with all possible speed. The mines in the island become very rich at great depths, and the inference is that no lasting results can be expected to attend mere shallow working: I, therefore, advise the sinking of the engine-shaft 20 fms. deeper, and as soon as this is completed drive a cross-cut to the lode, and concentrate all your explorations eastward, as I am of opinion the most valuable part of your mine will be found in the lower ground towards the Glen. You have a most excellent engine, and one calculated to put you down a considerable depth. Everything, both under and over ground, is arranged in a scientific and miner-like manner. A more complete pumping and winding engine is not to be found in any mine on the island. In conclusion, I must say that I have for years past entertained a high opinion of your property, and my recent inspection has confirmed it more strongly.—MATTHEW GROSE.

The CHAIRMAN said that the copious report which had just been read left but little for him to say beyond expressing the great satisfaction he felt at the very promising appearance which this mine now presented. They had already cut five courses of ore in the 15, 30, and 40 fathom levels, and would very soon be raising lead from them. They had also met with very encouraging appearances in the shallow pit sunk at surface to the east of the main shaft; and in the middle pit they were now working upon what appears to be a genuine vein of ore of a very fine description. With respect to the course of ore discovered in the 40 fathom level, he felt every confidence that it would increase in width as they opened out upon it, and that when they again intersect it in the new level proposed to be driven 20 fms. deeper he had no doubt they would find it to have increased at least double in value. In conclusion, he wished to say a word in respect to the unceasing energy that had been displayed by the managing director, Mr. Hughes, in surmounting the many difficulties to be overcome in putting so large an undertaking in thorough working order; and he felt satisfied that the whole of the work had been carried out with a completeness and economy that would bear most favourable comparison with any other mine in the kingdom. The Chairman then moved that the directors' report and statement of accounts be received and adopted.

Mr. COTTON asked if the shaft now being sunk at surface would require any extra machinery?—Mr. HUGHES replied that it would not be necessary to put up any extra pumping machinery, as they proposed to drain these surface shafts into the adit level.

Mr. COOMBE asked how deep the middle pit was at present?—Mr. HUGHES said the men had now got down about 25 ft., and were raising from that point a quantity of ore about 2 or 2½ in. wide; and he had every reason to expect that the ore they would obtain from it would more than repay the cost of sinking.

Mr. STRINGER asked if the captain was able to estimate the probable quantity of lead they were likely to get from the 40 fathom level?—Mr. HUGHES replied that it was not as yet possible to put an estimate on the lode, and the chief cause which prevented this was the unfortunate delay in the working of this level in consequence of the stoppage occasioned by want of coal.

Mr. WHARRIE then asked for some explanations respecting several items of expenditure which appeared in the balance-sheet, and after a full explanation of all the items by the auditor and by the managing director, Mr. Wharrie expressed himself perfectly satisfied.

The proposition, as moved by the Chairman, that the reports and balance-sheet be received and adopted, was seconded by Mr. Wharrie, and carried unanimously.

The MANAGING DIRECTOR, after giving replies and explanations to a number of questions put forward by the shareholders, begged to say that the worthy Chairman had overrated his (the manager's) services, for he had but done his duty, and he felt bound to say that the same had been done alike by all connected with this undertaking, from the labourer on the mine to the Chairman himself. He further wished to state that a better or more willing staff of miners than they had at their mine had never been got together, and it was in a great measure due to them and to the captain, Henry Lobb, that he (the manager) had been able so far to give the company satisfaction; and, through the care and ability of both captain and men, he was pleased to be able to inform the shareholders that not one accident or mishap had occurred during the taking down of the shaft, placing the pumps, and clearing out the old workings, all of which, as they well know, is very risky work, and required the greatest care and attention.

The MANAGER also desired to bear testimony to the services rendered to the company by their worthy director, Mr. Alexander Rule, who had devoted his time for weeks together at the mine, and in many of his (the manager's) difficulties had rendered him great service by advice and assistance. Moreover, Mr. Rule had given to the company, free of all expense, windows, doors, and many requisites, which would have cost the company upwards of 50*l.*, and he (the manager) felt that they were much indebted to Mr. Rule.

It was proposed by Mr. JOHN WALKER, and seconded by Mr. G. W. HUGHES, "That as the second 10,000 shares are now allotted, the qualification of director be the holding of 500 shares."

An amendment by Mr. ELLIOT, seconded by Mr. MATHER, and supported by Mr. WHARRIE, to the effect that the qualification of directors remain at 300 shares, as before, was put to the vote and lost. The proposition by Mr. Walker was then put to the vote and carried by a large majority.

The following propositions were also carried unanimously:—That Mr. Alexander Rule be elected to the office of director; that Mr. Gavin McKerrow be added to the list of directors; that the remuneration of the directors be 50*l.* per annum, to be paid according to attendance, or otherwise, as the directors may themselves think fit; that the general meetings be held every six months, instead of annually, and that the time for holding them be in February and August; that the directors' report and proceedings of this meeting be printed and circulated amongst the shareholders.—A vote of thanks was given to the directors for the able manner in which they had conducted the affairs of the company, and the special thanks of the meeting were voted to Mr. Rule for the present of materials he had so generously given to the company.

A vote of thanks to the Chairman terminated the proceedings.

THE MOLD MINES.

The annual meeting of the shareholders of this company was held at the secretary's office, Town Hall, Chester, on Thursday (Mr. Thos. BANTOCK in the chair), when the report of the directors and statement of accounts were read and approved, and passed unanimously. After which the position of the company was discussed, as the excessive wet period since last October has so obstructed the very important lower workings, which were gradually improving, that it was considered advisable to close the works for the present, though it is positively thought that had it not been for this the returns would have been so increased as to have realised profits before summer. It would appear that in the course of driving eastward last year towards Gwern-y-mynydd (which is considered by everyone to be the most valuable portion of the company's property) an increase of water was observed, so that it was deemed advisable to suspend the drivage eastward until an engine had been erected on the new shaft at Gwern-y-mynydd.

The CHAIRMAN stated it was now ascertained beyond a doubt that the water of the two mines—Cathole and Gwern-y-mynydd—is connected, and that the succession of floods and continued rains made it practically impossible to pursue the workings with any benefit without some additional pumping power to meet such contingencies.

This accession of water, together with the unusual wet season, induced the board some time ago to consult three eminent mining engineers, and their report, as well as that of Capt. Michell, the company's agent, were produced at the meeting, and fully discussed. The opinions of the engineers were of so favourable a character that the shareholders present were unanimously of opinion that with the existing paying prospects at Cathole an effort should be made to raise additional capital to place a second pumping engine on the Gwern-y-mynydd new shaft No. 2. For this purpose a committee, consisting of the directors and five of the largest shareholders, was appointed, and the utmost unanimity prevailed.

The gentlemen whose opinions coincide as to the merits and intrinsic value of this large property as a whole, but more especially of Gwern-y-mynydd (of which there seems to be but one universal opinion as to its value), are Mr. Arthur Waters, Mr. Walter Eddy, and Mr. Henry Dennis. Morever, Capt. R. G. Davies Cooke, a gentlemen and magistrate of large mining experience, also a shareholder, and having an intimate local knowledge of the whole property, has the very highest opinion of it, and he has consented to act upon the committee.

The meeting was brought to a close by a cordial vote of thanks to the Chairman and board of directors, with regrets that the efforts in their painstaking management had been obstructed by water difficulties in bringing the mines into a paying state.

EXMOUTH SILVER-LEAD MINING COMPANY.

The general meeting of shareholders was held at the mine, on Sept. 18, Mr. G. H. BOWYER (of Bristol) in the chair.

The notice convening the meeting having been read, and the minutes of the last confirmed,

The CHAIRMAN said that, although he regretted the small attendance of shareholders, it was an indication that they had full confidence in the management of the undertaking, and those shareholders who had gone over the mine to-day must feel considerable satisfaction at the progress that was being made. He called attention to the high prices obtained at the last sale of lead ores—No. 1 parcel realising 22*l.* 5s. 6d. per ton, whilst No. 2 parcel brought 16*l.* 17s. 6d., and No. 3 parcel 10*l.* 0s. 6d. These prices were much in excess of what the ore brought on a previous occasion, attributable, do doubt, to its containing a much larger percentage of silver. He was glad to state that the lode south of the winze was now worth 40*l.* per fathom, and that it was improving in depth. A considerable amount of dead work had been done during the past quarter, but it would ultimately have a profitable result, and they hoped in a few weeks to be in a position to make another sampling of lead ore, there being at the present time about 20 tons in the store-house. As regarded the accounts, everything had been brought close up, and the balance now against the mine was only 283*l.* 3s. 2d., which he anticipated would soon be paid off, and a balance to the credit of the mine shown at the next meeting.

The cash account for the three months ending July showed that the adverse balance of 1220*l.* 1s. 11d. from the last account had been reduced to 727*l.* 12s. 3d., while the statement of liabilities and assets further reduced the balance to the sum of 283*l.* 3s. 8d.

The report of Captain Cock from the mine stated that the levels and railroads were in good repair. There was good machinery for all dressing purposes—all in good condition, and working well. There is a good lode throughout No. 1 winze, which is 13 fms. deep, and they were now cutting out the back for stoping. In the bottom of the level south of the winze the lode is worth 40*l.* per fathom; but the lode north of the bottom level is disordered with iron as far as it had been driven. He will commence sinking winze on the north lode going down as soon as the stopes are sufficiently covered over and made safe. From information he had from individuals who formerly worked in this mine he thought it would be wise to repair the deep adit north. If this north part opened out anything like it did when it was formerly worked, the shareholders may expect to have a good and lasting profitable mine.

On the motion of the CHAIRMAN, seconded by Mr. KINGDON, the statement of accounts and Capt. Cock's report were adopted and ordered to be printed.

Mr. KINGDON then proposed, and Mr. TREVITHICK seconded, that Messrs. G. H. Bowyer and T. E. Marks be re-elected on the committee of management; and Mr. Doubting, having ceased to be a shareholder, it was proposed by the CHAIRMAN, and seconded by Mr. MARKS, that Mr. G. F. Fox be elected to supply the vacancy.

A vote of thanks to the Chairman terminated the proceedings.

BEDFORD CONSOLS MINING COMPANY.

The general meeting of shareholders was held at the company's office, Old Broad-street, on Wednesday. Mr. ROWELL (the secretary) read the notice convening the meeting, the minutes of the preceding one, the report of Captains George Rowe and Joseph Mitchell, the agents, and the balance-sheet, showing a balance of 29*l.* 19s. 7d. in the company's favour.

The agents' report was read, as follows:—

Sept. 24.—We beg to hand you our report of this mine for the general meeting, to be held on the 25th inst., showing the present position of your property, and the principal amount of work done during the past four months, which is as follows:—The engine-shaft is sunk 10 fms. 3 feet from the middle adit, making a total depth of 67 fathoms 3 feet below the surface, leaving about 3 feet further to sink to complete this 12 fms. lift, which we calculate will be accomplished in the coming week. After this work is done we purpose cutting a small plat at the present bottom, and extending levels both east and west on the course of the lode beneath the orey ground passed through in the level above, particularly towards and through the cross-course, which is some 7 fathoms west of shaft. In this direction several shoot of ore are known to exist going down, where we purpose sinking winzes on the course of the lode; so soon as the bottom drivages are sufficiently in advance to drain the water, so as to admit opening upon the lode with economy, where we have every reason to think it will be found highly satisfactory, judging from the character and appearance of the lode in the upper drivage. At the same time some considerable amount of work has been done at the surface in repairing the wheel-pit and engine-wheel, also the completion of the line of flat-rods from the wheel to the engine-shaft, with angle, balance, and shaft bobs, making the whole of this department complete for the future development of the mine, including horse-whim, poppet heads, shears, &c., with other necessary timber work preparatory to bringing the whim-kibble and pitwork to the bottom of the mine. To carry out the proposed work in driving levels, sinking winzes, and opening upon the lode in different places where we calculate to find ore, restoring or laying out new dressing-floors, and making the necessary roadways for taking the ore to the crusher-house and sampling-floors, it will incur a cost for a short time of about 120*l.* per month.—GEORGE ROWE, JOSEPH MITCHELL.

The CHAIRMAN informed the shareholders assembled that he had visited the mine very recently, in company with a fellow-shareholder, who was well versed in mining, and that they were very much pleased with everything they saw in connection with the mine, after having made a thorough inspection, both underground and at surface. The shareholders would have observed from the reports that have from time to time been inserted in the *Mining Journal* that everything has been pushed on as fast as possible in furtherance of the mode of operations agreed upon some eight months back. He was fortunate in fixing his time for visiting the mine just as the line of flat-rods were completed, so that Capt. Rowe started them working for the first time in his presence; and he must say that nothing could have worked with more precision, or given greater satisfaction. The shareholders were, therefore, to be congratulated upon the completion of so important a point of their operations, and especially so when it was considered the great saving in cost which would be effected from the fact of requiring no coal; this item was undoubtedly becoming a very serious matter in respect of many mines, but with Bedford Consols it was entirely obviated.

Mr. ROSEWARNE said that he had known this mine, and those in the surrounding district, for many years, and he was as fully convinced as ever that Bedford Consols was a most important property, and sooner or later must yield a rich harvest to those interested. If indications went for anything, the time was not far distant when this mine would make a great mark upon the mining market. He would again remind the shareholders of the close proximity of their mine to Gawton, which was under the same able management, and having the same lodes traversing both the setts.

A call of 10*l.* per share was then made, making 1*l.* 4s. per share paid.

The meeting expressed itself well satisfied with the report and management, and separated with a vote of thanks to the Chairman.

NORTH JANE MINING COMPANY.

A meeting of shareholders was held on Tuesday, at the offices of the company, Mr. WILLIAM CARPENTER in the chair. The accounts showed the labour cost for three months to be 398*l.* 18s. 8d., and a debit balance of 506*l.* 16s. 6d. A call of 5s. per share was made. The forfeited and relinquished shares are to be issued *pro rata* among the proprietors. The following report was read:—

Sept. 23.—Since the last meeting of the shareholders we have been building an engine-house, &c., on Gossan shaft, and enlarging the shaft to receive pitwork. The engine-house is completed, and most of the larger parts of the engine are fixed in their places. We have had to make some considerable repairs to the boiler, and also to the engine; these repairs will be completed this week. It is now a first-class boiler, and we shall get it into its place in a day or two. The shaft is enlarged and completed to the adit, or water level. At this level we have fixed cistern, to receive the house-water lift of pumps. Our shaftmen will go on fixing this shaft without delay. Our labour cost will be less in future, as we have dispensed with five of our quarrymen and labourers. We are anxious to get the water out of the 12 fathom level, having no donbt that we shall be able to set tribute pitches at that level. Our future workings will be carried on more parallel with the profitable workings in Wheal Jane Mine. To the west of gossan shaft there is a large quantity of ground not explored in depth; we know we can break tin when the water is pumped out. On the whole, our prospects for a good mine are very encouraging.—JAMES ROWE.

TIN VALLEY MINING COMPANY.

A meeting of shareholders was held on Tuesday, at the offices of the company, Mr. WILLIAM CARPENTER in the chair. The accounts showed the labour cost for three months to be 187*l.* 11s. 4d., and a credit balance of 15*l.* 0s. 10d. A call of 3s. per share was made. The following report was read:—

Sept. 21.—During the past quarter we have driven the south cross-cut in the adit level 14 fms. 3 ft. 8 in., and according to the dialling laid down on July 17 last we have about 12 fms. more to drive to intersect the lode—that is, supposing it keeps the regular underlay down to the given depth; and, if so, I fully expect to cut it within the next three months. The stratum of ground we are passing through has a very fine appearance, and is highly mineralised, the cross heads containing a good deal of mundic, with occasional spots of copper, and I have no doubt but that the lode, when met with, will prove very productive for tin; the end is being driven with a full pare of men, at 4*l.* per fathom, and every encouragement is given them by setting long extents, in order to obtain the object above named as early as possible. In conclusion, I beg to say that the lode which I have already alluded to will give full 40 fms. of backs above the water level, so that an ordinary produce of tin, with the conveniences there is at surface for returning, would at once bring the mine into a profitable state.—RICHARD SOUTHEY.

[For remainder of Meetings see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

The tendency upwards in prices in Belgium has become general, but it is difficult to give precise quotations, as rates vary greatly from day to day, and from one market to another. Merchants' iron is dealt in between 12*l.* and 12*l.* 16s. per ton; refining pig between 5*l.* and 5*l.* 12s. per ton, and plates between 17*l.* 4s. and 18*l.* 8s. per ton. As regards rails, if their average price may be given at 12*l.* per ton, it is none the less certain that they have experienced great variations. Some works show little inclination to undertake engagements to supply rails; others, on the contrary, enter into contracts at rates somewhat below the average quotations. The rise which, upon the whole, has taken place in rails has completely broken the former equilibrium in the rates current for new and old rails. Three months since old rails were at 7*l.* 4s. per ton, and everyone found them too dear upon those terms. It required a strong American demand, and the inevitable speculation which was the consequence of it, to enable this price named to be accepted and maintained. Now old rails bring 8*l.* and 8*l.* 4s. per ton, even the last sold by the Northern of France Railway Company. It seems to be more and more the opinion that a quotation of 8*l.* to 8*l.* 4s. per ton is exaggerated, and yet with new rails at 12*l.* per ton old rails ought to sell at 8*l.* 16s. to 9*l.* 4s. per ton, since for 2*l.* 16s. or 3*l.* 4s. per ton they might be converted into new ones. The Belgian iron trade, which complains of a scarcity of raw materials, might not unprofitably direct its attention to this circumstance. As regards railway matériel, indirect orders abound,—that is, announcements of foreign contracts flood the market. Nevertheless, Belgian firms which submit tenders to German companies find that the work tendered for is almost always let to German establishments, although wheels and axles must be excepted from this remark. As regards wheels and axles, England cannot compete with Belgium upon the continental markets. The production of iron in France in 1871 was estimated at 1,350,000 tons, in Germany at 1,250,000 tons, in Belgium at 896,000 tons, in Austria at 450,000 tons, in Russia at 330,000 tons, in Sweden and Norway at 280,000 tons, in Italy at 75,000 tons, and in Spain at 72,000 tons. The Monceau-sur-Sambre Blast-Furnaces Company has announced an interim dividend for 1872; this interim dividend is at the rate of 5 per cent. per annum.

The general condition of the French coal trade remains much the same as before reported. Neither merchants nor proprietors of works have been able to lay in all the supplies which they require, and as the demand for coal for the sugar works is likely to be larger than usual, in consequence of the crop of beetroot being exceptionally heavy, very high rates for coal are anticipated by some persons this winter upon the French markets. At St. Etienne coke is worth 1*l.* 2s. 6d. to 1*l.* 14s. per ton, according to quality and the special purposes to which it is to be applied. As in Belgium, French colliery owners complain of a great scarcity of working miners. Tenders have just been invited for the supply during the ensuing winter of the coal required at the police offices of Paris. The advertisements issued upon the subject do not appear, however, to have provoked any response.

A fall of 4*l.* per ton has been noted in Chilian copper, in bars, upon the Paris market, and one of 2*l.* per ton has occurred in ingots. Chilian in bars, delivered at Havre, has made 96*l.* per ton; ditto in ingots, 102*l.* per ton; tough English, 102*l.* per ton; and Corocoro minerals (pure standard), 100*l.* per ton. Affairs in copper have not revived at Havre, notwithstanding the arrival of rather large supplies. The Marseilles market has continued quiet. The German copper markets have been rather feeble. The German tin markets have displayed a good general tendency. At Paris business in tin has been rather restricted. At Rotterdam tin has scarcely maintained former rates; Banca has slightly receded—to 95 fls., while Billiton has brought 91 fls. At Paris, English lead has risen to 20*l.* 18s. per ton. French lead, delivered at Paris, is quoted at 21*l.* 4s. per ton, and Spanish, delivered at Havre, has made 21*l.* per ton. The German lead markets have been generally firm, and prices have experienced no change. Silesian zinc has risen at Paris 4s. per ton. There has also been an improvement in the price of the rolled zinc of the Vieille-Montagne Company, which is quoted at 31*l.* 4s. per ton. In Germany zinc appears to be acquiring increased firmness.

The French iron trade continues in a feverish state. No. 1 rolled coke-made iron is dealt in the Haute-Marne at 12*l.* 16s. per ton, while charcoal-made refining pig realises 7*l.* 4s. per ton. In the Meurthe-et-Moselle pig remains in great demand; offers are made at 5*l.* to 5*l.* 8s. per ton without its being possible to obtain deliveries, as there is scarcely any disposable stock. The imports of pig and castings into France in the first seven months of this year amounted to 105,000 tons. The imports of iron and plates into France in the first seven months of this year show a great falling off, having declined to 24,080 tons. The direct exports of iron from France present rather a considerable increase this year, having amounted to 54,000 tons; the export iron trade of France would appear, indeed, to be steadily extending. Germany, Italy, and Russia have forwarded the most orders of late. The works known as the Rouen Forges have been disposed of to the Orleans and Rouen Company, represented by MM. Philippart and Cacheral-Clarigny; the price paid for the works was 16,000*l.* The production of Bessemer steel appears to be every day increasing in France. The Denain and Anzin Forges Company is establishing some converters. The bulletin of the Committee of French Forgemasters announces that the Denain and Anzin Company has just concluded with the Northern of France Railway Company a contract for 80,000 tons of steel rails, to be delivered in the course of the next 10 years. The St. Etienne Collieries Company will pay, Oct. 16, an interim dividend at the rate of 4s. per share.

Never since 1866 has more activity prevailed in the Belgian coal mining districts, and never since that period have prices been more remunerative. It has become almost impossible to furnish quotations for the various qualities of coal, their value being almost nominal. Consumers may be said to take off coal in proportion as it is offered to them, and in proportion to the production; they do this without any hesitation, and without any discussion as to conditions of sale. Englishmen, Frenchmen, Danes, Norwegians, and Germans also appear on the Belgian markets as purchasers of coal, and they tender orders which in many cases coal workers find themselves obliged to refuse. It is rather remarkable that, while the high price of coal corresponds this year with a period of great activity in the Belgian iron trade in 1866, the same trade complained bitterly of want of work. Then, as now, the want of labour limited the production of coal below the demand, and compelled colliery proprietors to restrict the amount of their transactions. The last report of the Liége Chamber of Commerce shows that the production of coal attained a total 3,345,557 tons last year, showing an increase of 183,376 tons upon the extraction of the preceding year. The average price of coal of all descriptions in the Liége district in 1870 was 8s. 4d. per ton; in 1871 it rose to 10s. 6d. per ton. The exports of coke from the Liége district declined last year 27,706 tons as compared with 1870. Upon the whole, 1871 was a good year for Belgian colliery proprietors, and it would have been better still but for a deficiency in means of transport during part of the year.

FRENCH COAL FOR ENGLISH USE.—Messrs. Prescott and Hogben write—"We have observed of late several statements with reference to the purchase by English firms of 250,000 tons of coals in the Pas-de-Calais. Will you allow us, for the information of the English public, to state that we have visited all the coal districts in this department, and cannot find that such sales have been effected. The largest to any English firm is 12,000 tons of steam, gas, and house coal, which we have bought, and are now shipping from Calais to England. This supply we have great difficulty in obtaining, and from our knowlege of the coal mines in the Pas-de-Calais, consider it an utter impossibility that a supply equal to that stated could be shipped to England before the end of the current year."

FOREIGN MINES.

DON PEDRO NORTH DEL REY (Gold).—Telegram from Lisbon: "Produce weighed to Aug. 30, 3176 oits.: estimate for August, 4676 oits."

EMMA.—Telegram from Salt Lake City, Sept. 23: Forwarded no ore this week to New York; raised 520 tons first-class ore this week; raised no second-class ore this week; 430 tons first class ore at railway depôt; 300 tons first-class ore raised at mine; sold 330 tons here. Anderson at the mine.—[The eleventh monthly interim dividend, at the rate of 18 per cent. per annum, will be paid on the 1st proximo.]

Telegram from Mr. G. Anderson, M.P.:—"Visit to mine highly satisfactory; been through all but deepest level; great wealth beyond possible doubt; ore everywhere; management energetic and thoroughly reliable."

COLORADO TERRIBLE LODE.—The directors have received the agent's statement of the amount of ore raised during the month of July, which shows:—Ore raised, 810,950; month's expenses, 8313·36: leaving a balance of 8636·64. A small shipment of about 1 ton of mineral jigged from the pile of third-class ore has reached Liverpool, the assay is 213 ozs. of silver per ton: 67½ per cent. lead, and its value 62*l.* 10s. 1d. per ton, the lead alone being worth 11*l.* 14s. per ton of ore. The railway freight note for a further shipment of first-class ore arrived on the 16th inst.

FLAGSTAFF.—Telegram from Mr. G. O. Frames, one of the directors specially appointed to examine the Flagstaff Silver Mine:—"Examined mine; ore abundant; can supply double present smelting-power; new furnace ready by November; management satisfactory."

PACIFIC.—H. Prideaux, Sept. 4: Our measuring and setting day was on the 2nd inst. The stopes in the back of the 400 feet level (Batters' ledge) measured as follows:—No. 1, 10 fms. 32 ft.; No. 2, 2 fms. 13 ft. 6 in.; No. 3, 14 fms. 8 ft.; No. 4, 13 fms. 28 ft.; No. 5, stope and drift, 11 ft. 8 in.; No. 6, 11 fms. 3 ft. 6 in. No. 2 stope is re-set to a party of four men, at 838 per fathom; the vein here is 12 in. wide, of good ore. No. 3 is also re-set to a party of four men, at 832½ per fathom; the vein in this stope is about 10 in. wide, of good quality ore. No. 6 stope is again re-set to a party of four men for one month, at 826 per fathom; here the vein also looks well. The other stopes are not as yet re-set.—Levels: The contract of 100 ft. in the 400 feet west level is completed; the vein at this point is rather poor and unsettled. This level will remain idle until we connect the same with the 460 feet level, which is being done by sinking a winze near the present end; this will take us about one month. The contract in the 460 feet west level of 100 ft. is also completed, and the level is again re-set to four men, at 88 per foot; the vein is very much improved, it being 12 in. wide, of very good ore. The new winze which is to connect this with the 400 feet level is let to a party of four men, at 87 per foot; this, when completed, will lay out more stoping ground, as the vein looks well. The contracts in the cross-cuts and rises are not yet completed, and in the same there is no particular change. The quantity of ore raised in the past month is about 100 tons, 50 of which is assorted and ready for the mill, and 50 to be assorted, besides 4 tons which has been shipped to Liverpool.

HUDSON (Gold).—S. O. Brown, Aug. 31: I have ordered all the lumber and supplies necessary for present use, and expect everything on the ground by the latter part of the coming week. I have commenced work on a reservoir, from which the water is conducted by iron pipe to location of motive-power, and have also commenced grading for foundation of hoisting works and for a short road, by which machinery can be laid down at proper place. As soon as the machinery shall have come to hand I shall put on a full labour force, and push the work forward toward completion as rapidly as possible.

BATTLE MOUNTAIN.—Captain Richards, Aug. 29: Virgin: In the 118 ft. cross-cut, in the bottom of Bishop's winze, work has been resumed; from the cross-cut a level is to be driven north a short distance, and then a winze sunk on the course of the lode. In the 113 ft. level north the lode does not produce as much ore as when last reported on, but still the ground is very favourable, and I think we may shortly expect another deposit in this direction. The 73 feet level being driven north shows no change yet. Pierce's stope, in the back of the 113 ft. level, is producing some very fine ore; it has much improved in its yield. Jack's stope, in the back of the 73 ft. level, is also yielding a fair quantity of ore. Jack's north is turning out some good ore, but it being considerably mixed with country rock, and of a hard nature, it cannot be worked as speedily as other points.—Lake Superior: Richard's winze being sunk in the bottom of the 135 ft. level is of a promising character, although no copper at present. We raised 365 sacks this week.

BENSBERG (Lead Mining and Smelting).—J. W. Hoffman, Sept. 23: We commence delivering ore to-day. Our production last week was still got from the west end of the open east, but there was less carbonate than before, the layer creeping up to surface and becoming thinner. We have stopped working the portable engine, there being no more water in the open-cast, and are now repairing it to use for winding or pumping.

[For remainder of Foreign Mines see to-day's Journal.]

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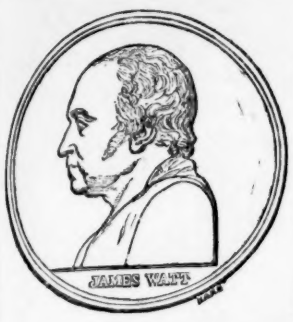

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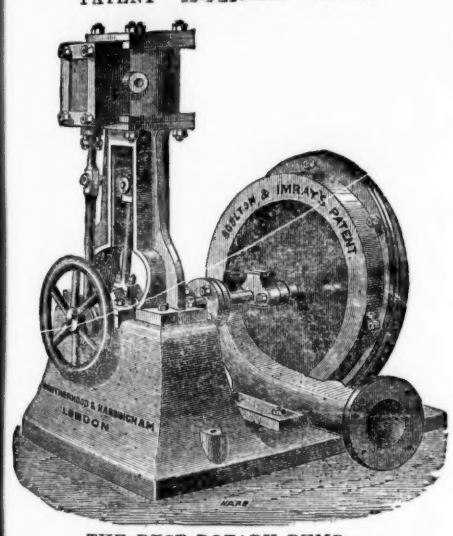

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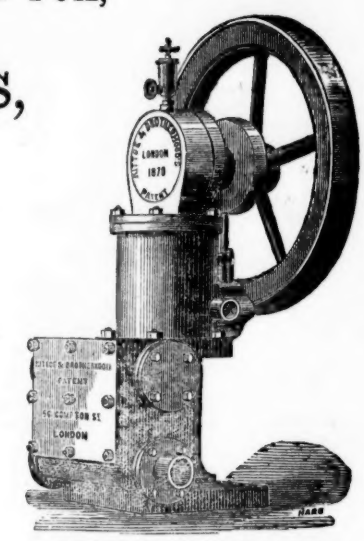

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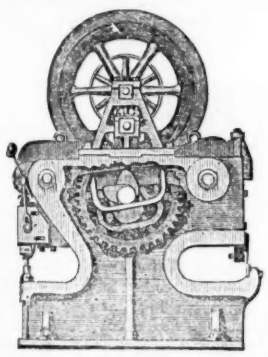

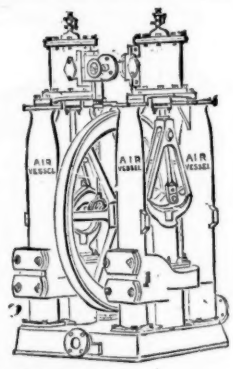

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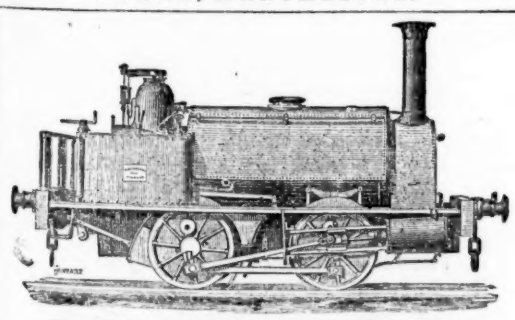

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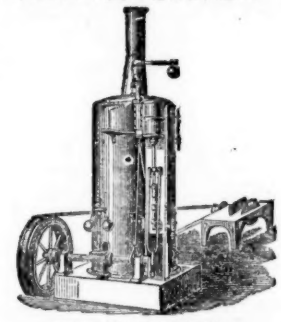

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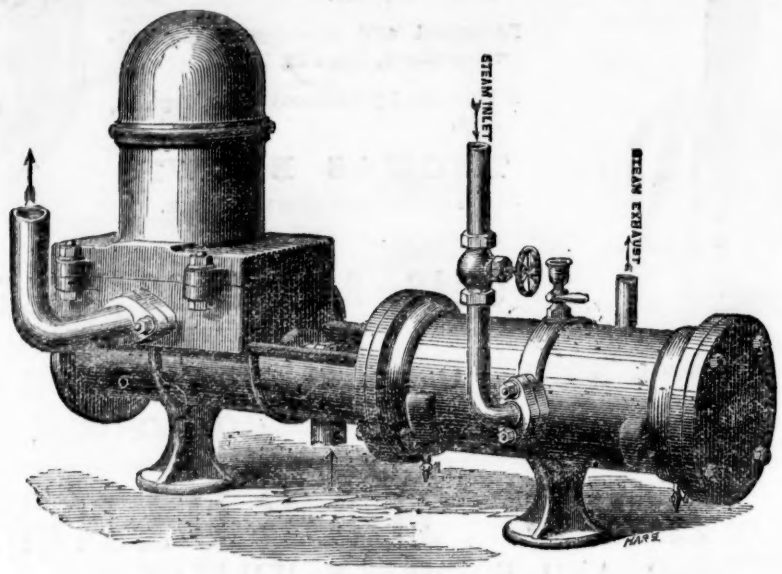


TESTIMONIALS.

Tottenham Local Board of Health, Tottenham, 12th December, 1870.

GENTLEMEN,—I have much pleasure in informing you that your Steam Pump proved itself to be one of the most useful machines for raising water that I have ever seen. It was driven night and day for nearly three months without a single hitch. The construction of the pump is so simple that any person can be taught to open it, and replace or clear the valves. I have seen no engine at all to be compared with it for mines, coal pits, or small water-works.

I am, Gentleman, faithfully yours, (Signed) P. P. MARSHALL, C.E., Surveyor.

MESSRS. HAYWARD TYLER and Co., London.

Aston Main Coal Company, near Sheffield, 1st December, 1871.

To MESSRS. HAYWARD TYLER and Co., 84, Upper Whitecross-street, London.

GENTLEMEN,—In answer to your enquiry, I beg to state that the two "Universal" Pumps supplied to us (through your agent, Mr. T. A. Ashton) are doing our work exceedingly well; we think they are the best in the market, and shall be glad if you will send us another 9-in. cylinder 6-in. pump, one week from this date.

Yours truly, (Signed) ASTON MAIN COAL COMPANY.

Extract of a Letter from JOHN SIMPSON, Esq., to Hayward Tyler and Co.'s Agent.

Rhos Llantwitt Colliery, Cwerphilly, near Cardiff, March 4, 1872.

I should like to have the water-piston and clacks the same as in our present pump, as they work exceedingly well, and I do not think it is possible to improve upon the present pump, except by lining the cylinder with brass as ordered. (Signed) JOHN SIMPSON.

PATENT STEAM EARTH-BORING MACHINES

FOR

MINERAL EXPLORATIONS

AND WATER SUPPLY,

Capable of BORING HOLES from 6 to 36 in. diameter, and to any depth to 2000 ft.

Price, and terms of hiring, may be obtained from the Patentees,—

MATHER AND PLATT,

SALFORD IRONWORKS, MANCHESTER,

MAKERS OF

LARGE PUMPS, PUMPING ENGINES, WINDING ENGINES, &c.

THE DON ECONOMIC LUBRICATING OIL

IS 40 PER CENT. CHEAPER THAN THE ORDINARY KINDS.

MR. ALFRED HEWLETT, of the Wigan Coal and Iron Company, says:—"I have used it for two years, and find it to answer exceedingly well for lubricating purposes."

MR. NASMYTH, the Inventor of the Steam-Hammer, says:—"I am highly pleased with it as a most effective and durable lubricant, having remarkable properties in the way of setting free bearings which had got set fast."

In face of these and hundreds of other letters to the same effect, it is a MERE WASTE OF MONEY to use the dearer kinds for the engines and machinery of collieries and mines, numbers of which are now using the Don Oil instead.

Any company desirous of trying it before adopting it may do so at our risk and expense.

Circulars containing particulars sent on application.

PRICE—By the Ton of 253 Gallons, 2s. 6d. a gallon; by the Cask of 40 Gallons, 2s. 9d.

AGENTS WANTED AT HOME AND ABROAD.

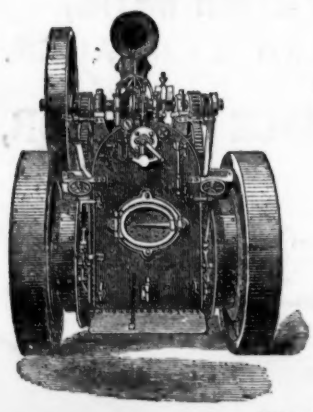
DUNCAN BROTHERS,

MANAGERS,

DON OIL COMPANY, 2, BLOMFIELD STREET, LONDON, E.C.

ROBEY AND COMPANY, LIMITED,

ENGINEERS, LINCOLN.



PATENT PORTABLE

HAULING AND WINDING ENGINE

WITH

PATENT DRUM WINDLASSES,

FOR MINING PURPOSES.

This Engine is specially commended to Mining Engineers and others, as by its adoption—

Haulage along inclined drifts is easily and cheaply effected;

The expense of sinking new shafts is greatly reduced, neither foundations nor engine-house being required;

It is available not only for winding, but for pumping, sawing, &c.—a great desideratum at a large colliery;

It can be very quickly removed (being self-propelling), and fixed in any desired position.

Prices and full particulars on application as above, and also references to view the engine in successful work near Derby, Caernarvon, Haverfordwest, Darlington, Durham, Penzance, and other places.

THESE ENGINES WORK WITH MARVELLOUS ECONOMY IN FUEL.

McKEAN'S ROCK DRILL,

FOR MINES, TUNNELS, QUARRIES, AND SUBMARINE WO

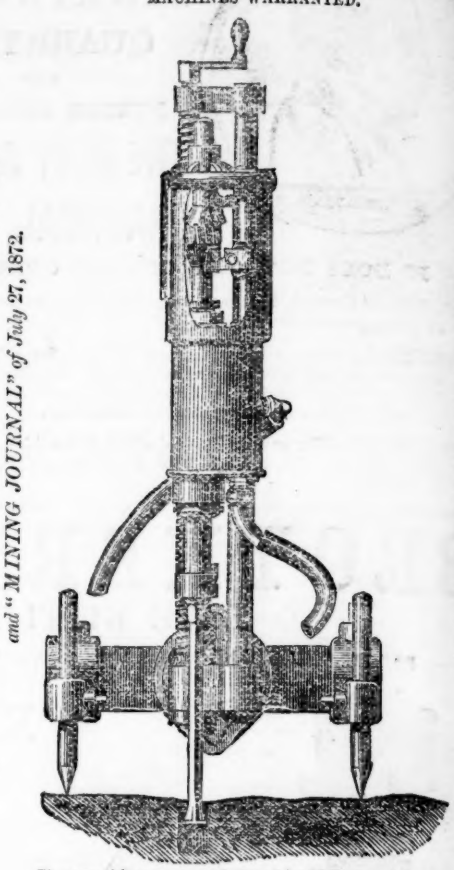
500 TO 1000 *STROKES PER MINUTE*

(counted by mechanism).

PENETRATES GRANITE 6 TO 12 INCHES PER MINUTE

MACHINES WARRANTED.

For full description, &c., see "ENGINEERING" of July 26, 1872, and "MINING JOURNAL" of July 27, 1872.



Use of McKEAN'S ROCK DRILLS may be seen working in Aberdeen granite from One to Four o'clock daily at 42, Borough-road, S.E., London.

These machines are manufactured for McKean and Co. by

MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS" GLASGOW;

MESSRS. VARRALL, ELWELL AND MIDDLETON, PARIS; AND E. REMINGTON AND SONS, NEW YORK.

SMALL PORTABLE BOILERS, or AIR COMPRESSORS, fu nished, if required; the latter with GIFFARD'S FRICTIONLE VALVE PISTON.

McKEAN AND CO.,

ENGINEERS,

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AND 5, RUE SCRIBE, PARIS.

Circulars sent free.

N.B.—McKEAN and Co. are sole agents for M. GIFFARD'S FRICTIONLESS VA PISTON, for Pumps, Air Compressors, &c., giving a larger percentage of yield th any other system.

THE

RAILWAY SPRING COMPANY,

MILLSANDS, SHEFFIELD,

Having purchased from the Trustee of the late Firm of W. Cha and Co. the extensive works, with the valuable and improved m chinery, are prepared to execute orders for every description of

RAILWAY SPRINGS.

INCREASED VALUE OF WATER POWE

The extraordinary advance in the price of coals has directed more attentio water power, and to the best manner of applying it. For many years it has be to a great extent, neglected and undervalued. One great objection to it has b the variable natur e of most streams in these countries, having abundance of wa during the winter half-year, and very little in the dry season. No kind of wa hitherto known was able to give the proper proportion of power from the usua quantities of water, so that it became the practice very generally to use steam p tirely during the summer half of the year, letting the water go to waste. This now completely prevented, and the full available power can be obtained from stream at every season by using .

MacADAM'S VARIABLE TURBINE.

This wheel (which is now largely in use in England, Scotland, and Ireland) is only one yet invented which gives proportionate power from both large and s quantities of water. It can be made for using a large winter supply, and yet w with equal efficiency through all variations of quantity down to a fifth, or even if required. It is easily coupled to a steam-engine, and, in this way, always as it by whatever amount of power the water is capable of giving, and, there saves so much fuel.

This turbine is applicable to all heights of fall. It works immersed in the water, so that no part of the fall is lost, and the motion of the wheel is not affe by floods or back-water.

References to places where it is at work will be given on application to the ma

MacADAM BROTHERS & CO.,

ENGINEERS, BELFAST.

PROTECTION FROM FIRE!

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Bryant & May's PATENT SAFETY MATCHES

LIGHT ONLY ON THE BOX!

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